Total vegetation cover soil protection Region:NRM Burnett Mary QLD

Date: October 2006

This report describes vegetation protecting the soil surface from erosion during a chosen month compared to previous years. This report has been generated using MODIS fractional vegetation cover information available in Rangelands and Pasture Productivity (RAPP) map tool https://map.geo-rapp.org/#australia. The report is based on 500 metre pixel data on monthly time steps. Land use forest cover:

Results can be shown for the whole region (polygon), and separated by land use and forest cover classes which are likely to show different cover patterns and targets. Land use is divided into four broad classes: Conservation and natural environments, Agriculture, production native forests and plantation forests (no report), and other (no report). Agriculture is divided into grazing, crops and horticulture which are sub-divided into non-irrigated and irrigated. If forest is present land use is further divided into: non-forest, woodland forest and non-woodland forest. The area of each land use and forest class are shown as a map and chart. The report content is repeated for each land use and forest covers at least 1% of the area of the chosen region. Total vegetation Cover:

The total vegetation cover indicates where soil is likely to be protected from wind and or water hillslope erosion. Total vegetation cover for this month is shown on a map and chart classified into 4 classes.

• 71-100% High cover – protected from wind and usually water erosion (high rainfall, steep slopes, and erodible soils may need greater than 80, 90, 95 and up to 100% cover)

- 51-70% Moderate cover protected from wind erosion
- 31-50% Low cover not protected
- 0-30% Very Low cover not protected

Erosion protection: Wind erosion 50% total vegetation cover

The vegetation cover threshold required to prevent soil erosion is usually 50% to reduce wind erosion, 70% or 80% to reduce water (hillslope) erosion depending on the steepness and rainfall. Areas protected from erosion for the month:

- Map: water erosion protection (>70% cover) percentage area and hectares.
- Map: wind erosion protection (>50% cover) percentage area and hectares. Comparison with previous years:
 - Map: anomaly comparing this month to the average cover from the same month in previous years.
 - Map: deciles rank of month against the same month in previous years.

Anomalies and deciles until September 2019 are calculated comparing to the same months 2001 to 2019. Extra monthly data will be used to calculate anomalies and deciles post September 2019 as they become available. Time series monthly from January 2001 to current:

Erosion protection

- Wind erosion protection time series: percentage of the area of the region with greater than 50% cover for each month (orange lines). Horizontal lines are 10th (cover target) and 50th percentiles.
- Water erosion protection time series: percentage of the area of the region with greater than 70% cover for each month (blue line). Horizontal lines are 10th (cover target) and 50th percentiles.

Rainfall

• Millimetres rainfall each month (black line).

Each time series is also stacked by year. The black line shows the current year of data. Water erosion protection for higher rainfall and steeper slopes:

Water erosion protection on higher slopes. As slope increases, more cover is required to control water erosion. The thresholds reported are:

- the percentage area with pixels greater than 80% total cover.
- the percentage area with pixels greater than 90% total cover.
- the percentage area with pixels greater than 95% total cover.

Acknowledgment of data:

- 1. http://www.agriculture.gov.au/abares/aclump/land-use/alum-classification
- 2. http://www.agriculture.gov.au/abares/forestsaustralia/sofr/sofr-2018
- 3. https://www.dpi.nsw.gov.au/agriculture/pastures-and-rangelands/establishment-mgmt/production-management2/groundcover
- 4. MODIS Fractional cover algorithm:

https://doi.org/10.4225/08/5848a3f19a7b3

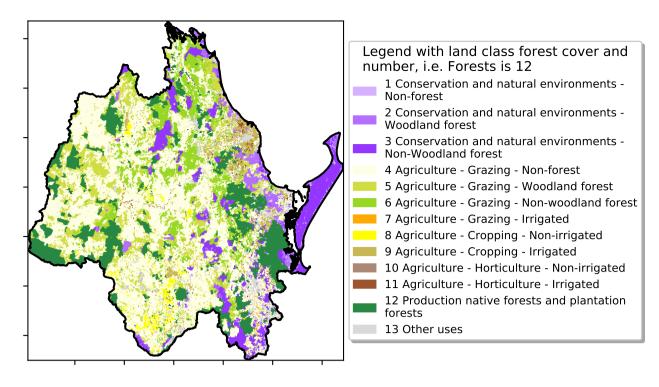


Vegetation Cover Oct 2006

Land use and forest cover

Proportion of each land class in area





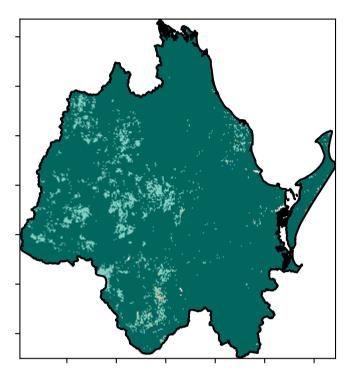
120/07200

52%70%

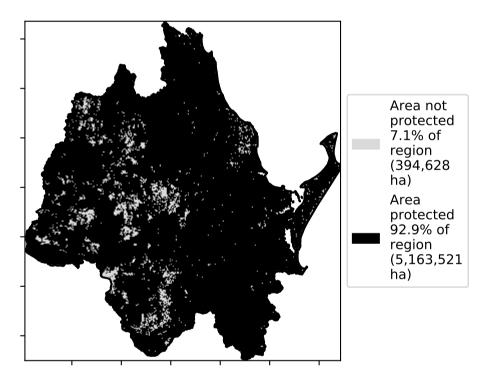
32%50%

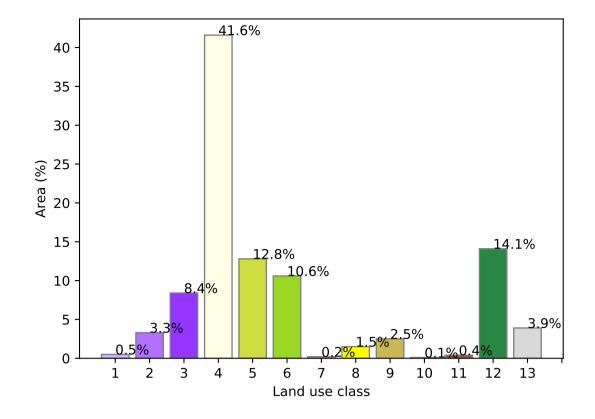
0.30%

Total Vegetation Cover [%]

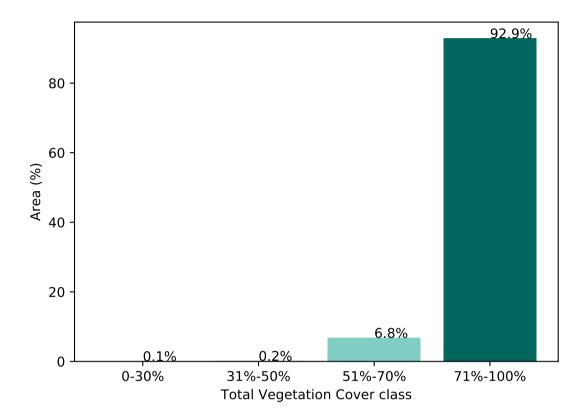


% Area protected from water erosion (>70%)

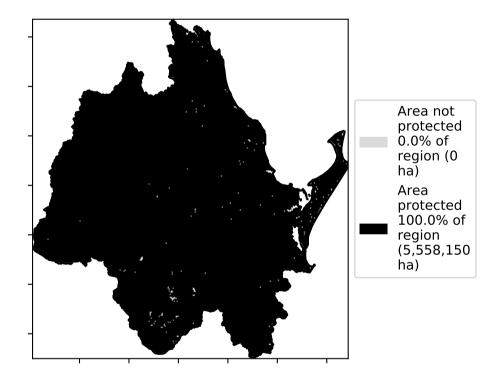




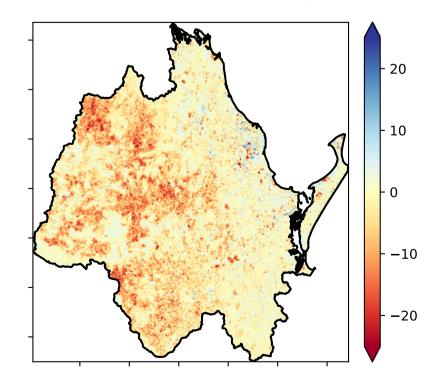
Proportion of vegetation cover class in area



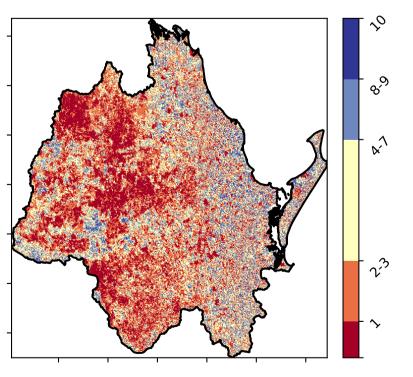
% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]

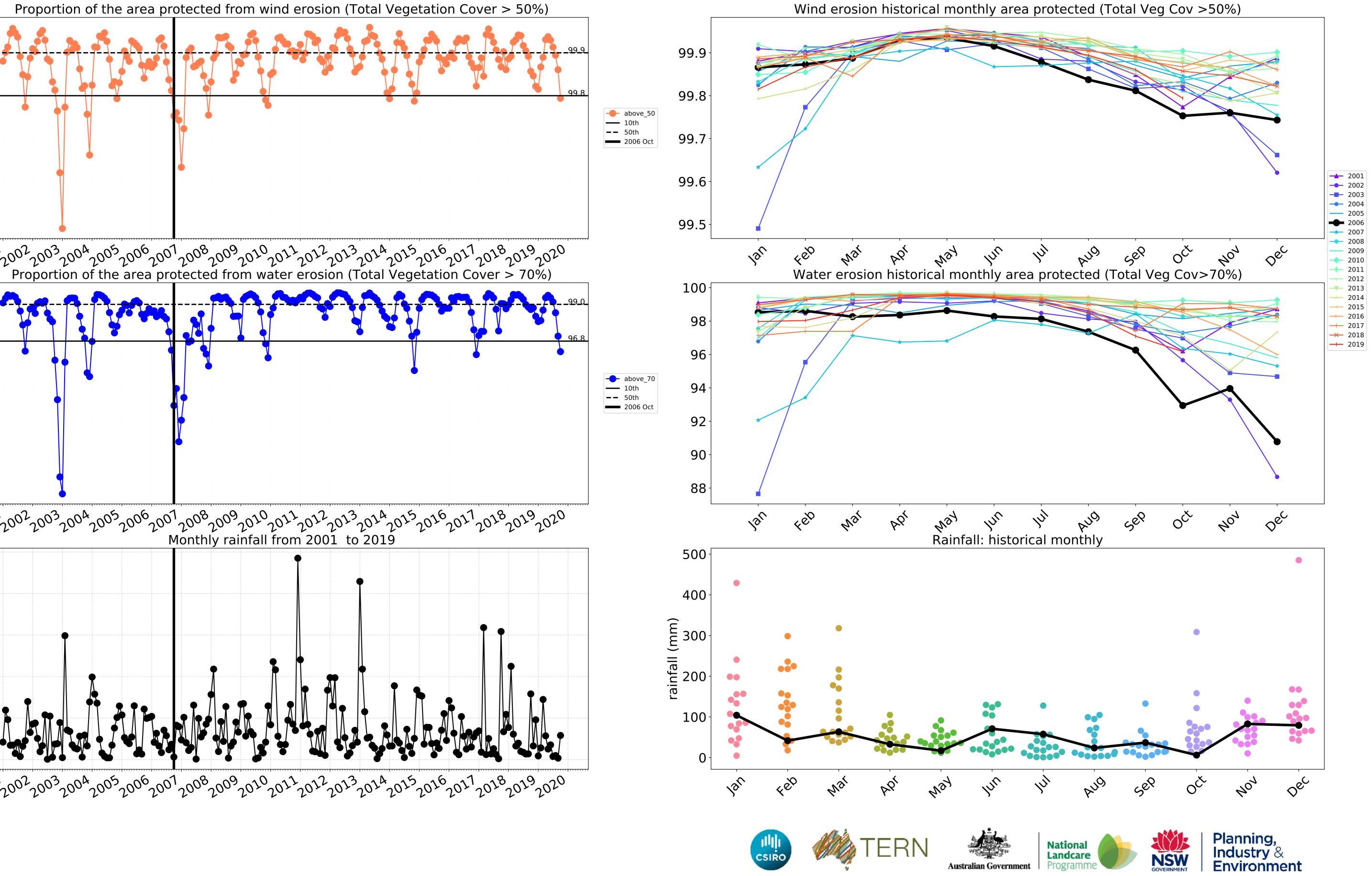


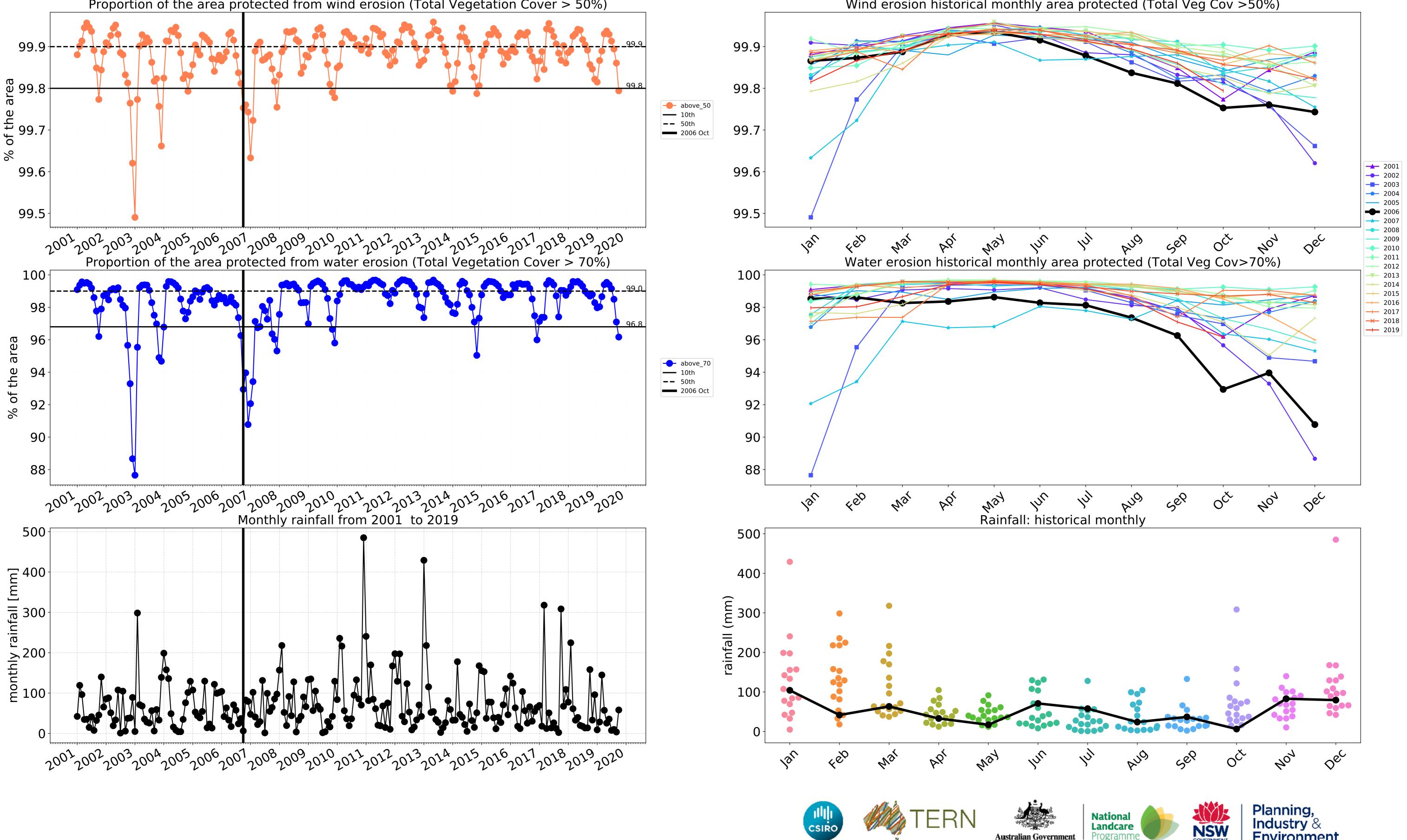
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019. **Total Vegetation Cover Decile [%]**

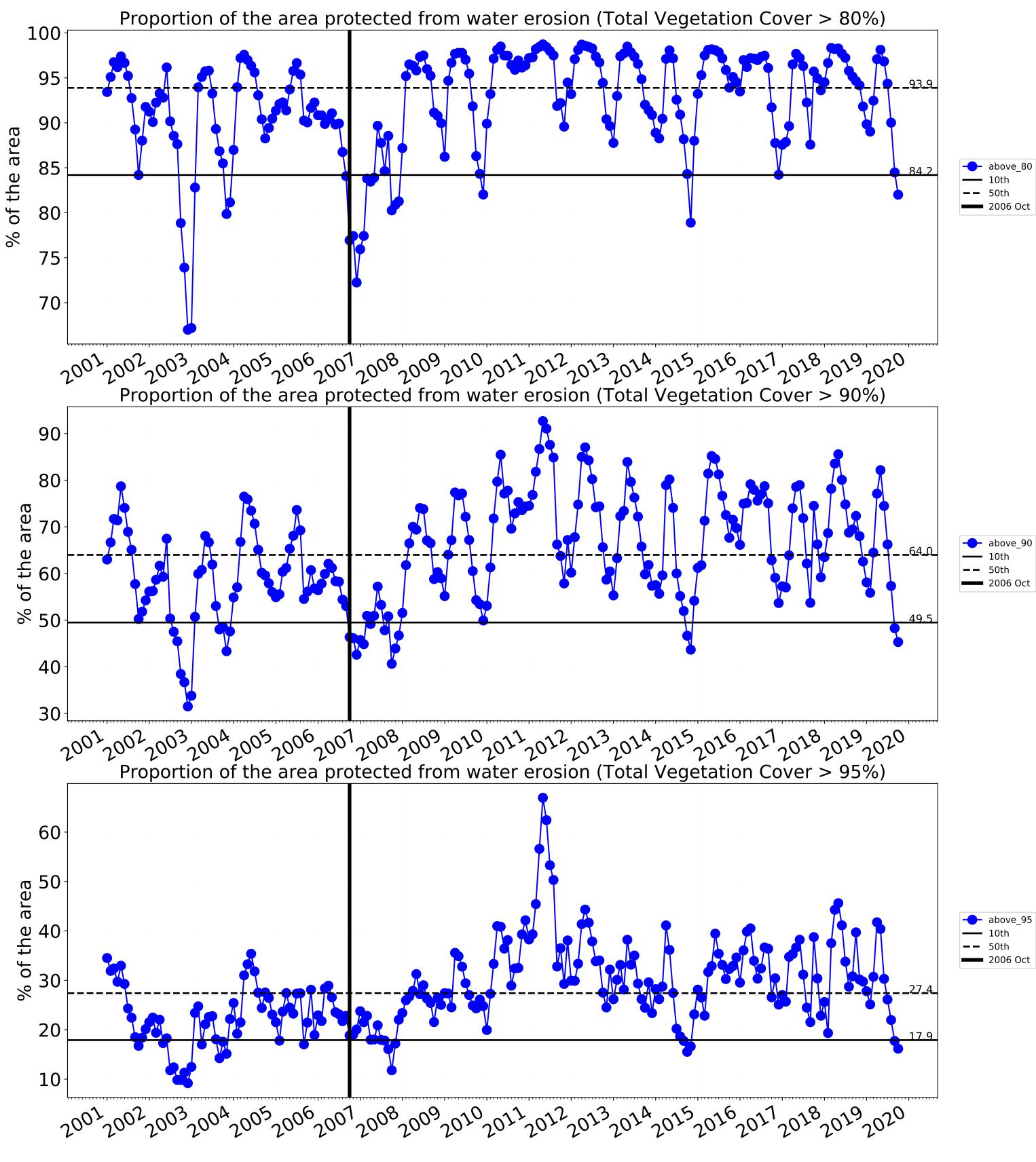


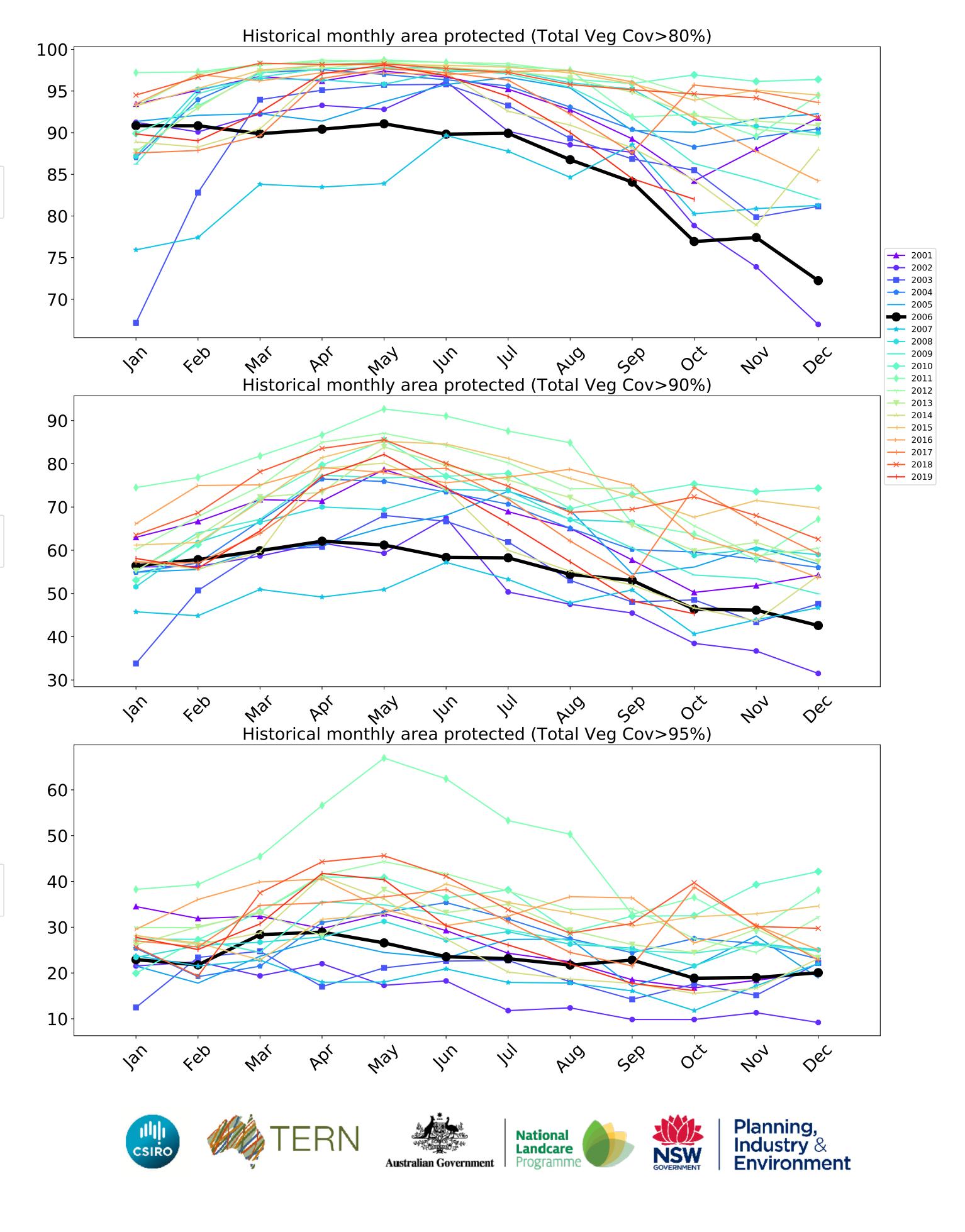


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



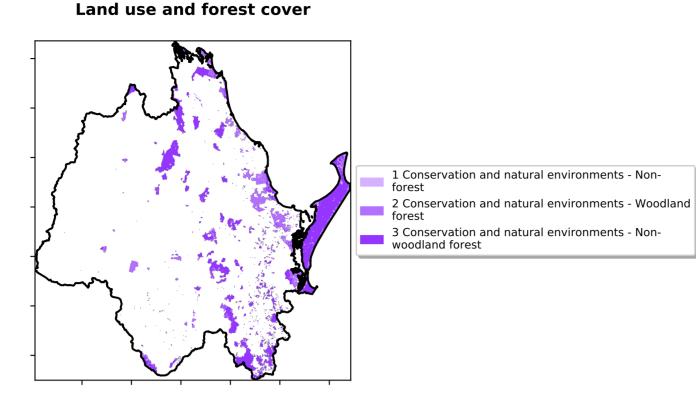




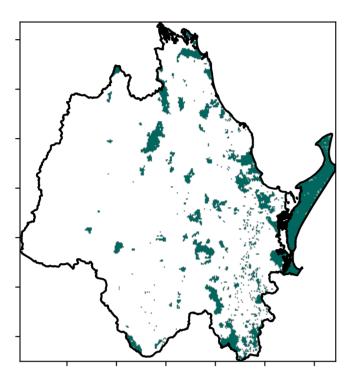


Conservation and natural environments

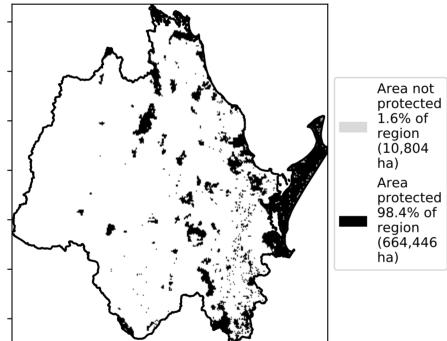
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

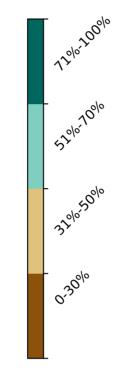


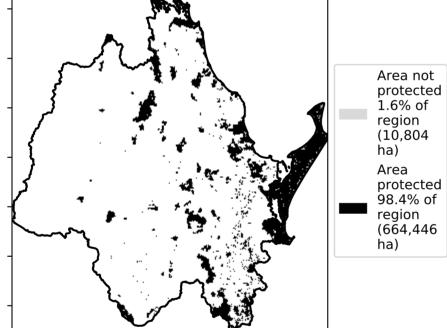
Total Vegetation Cover [%]

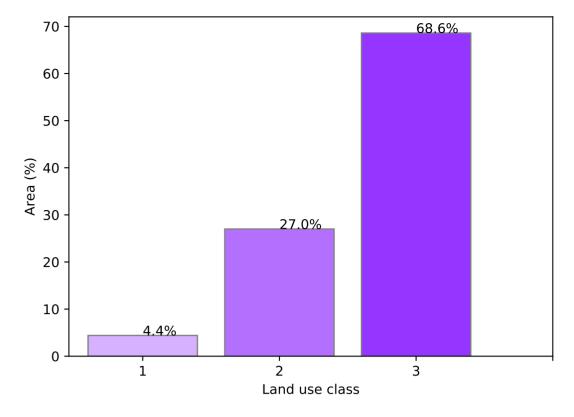


% Area protected from water erosion (>70%)



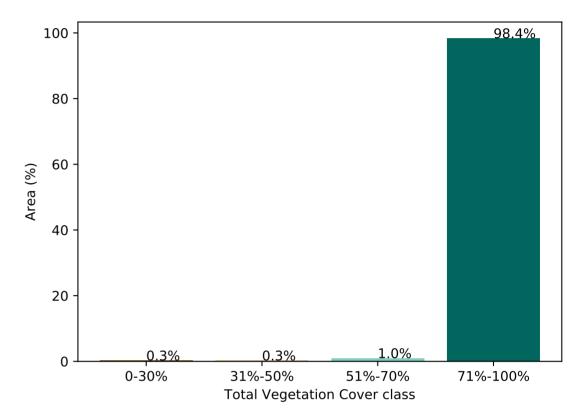






Proportion of each land class in area

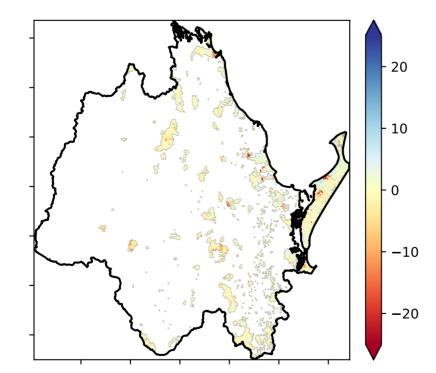
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

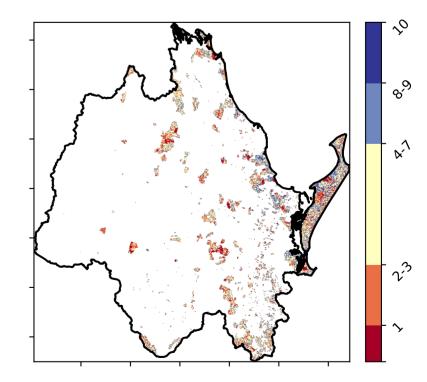


Total Vegetation Cover Anomaly [%]



Area not protected 1.0% of region (6,752 ha) Area protected 99.0% of region (668,497 ha)

Total Vegetation Cover Decile [%]





Deciles show where the

pixel value lies in the

record, from highest to lowest, for that month. That is, red pixels are

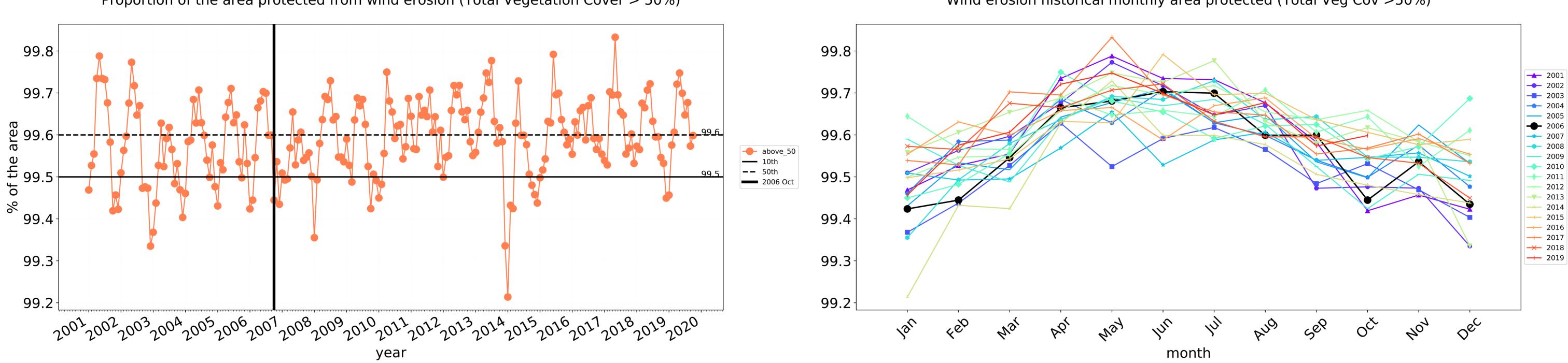
records for that month of

the map using baseline from 2001 to 2019.

in the lowest 10% of

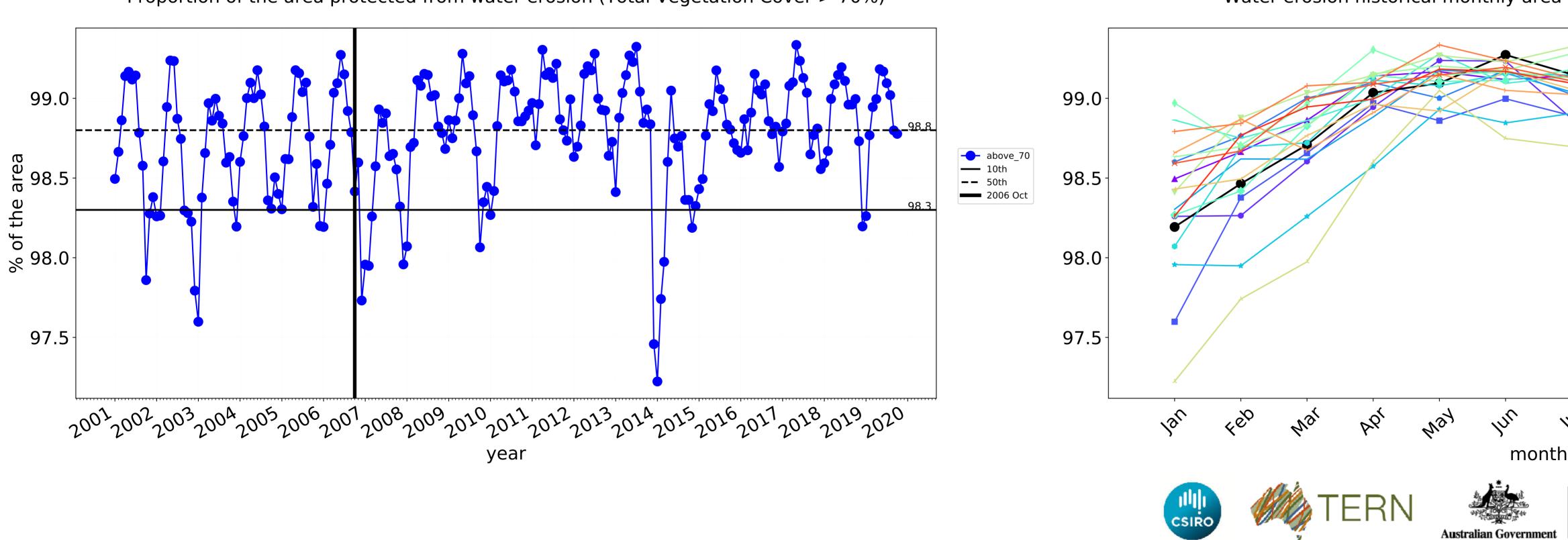
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map from 2001 to 2019.

3



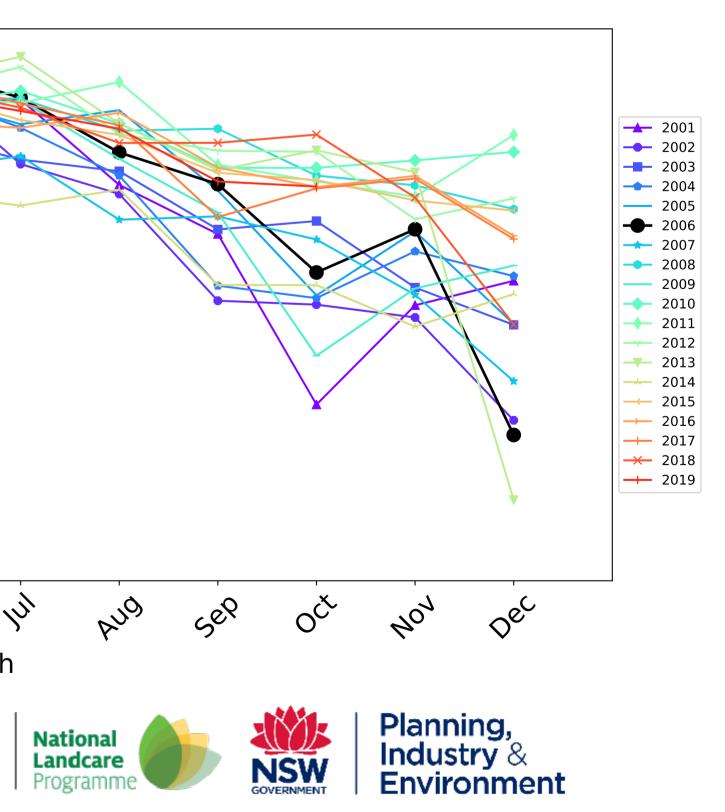
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

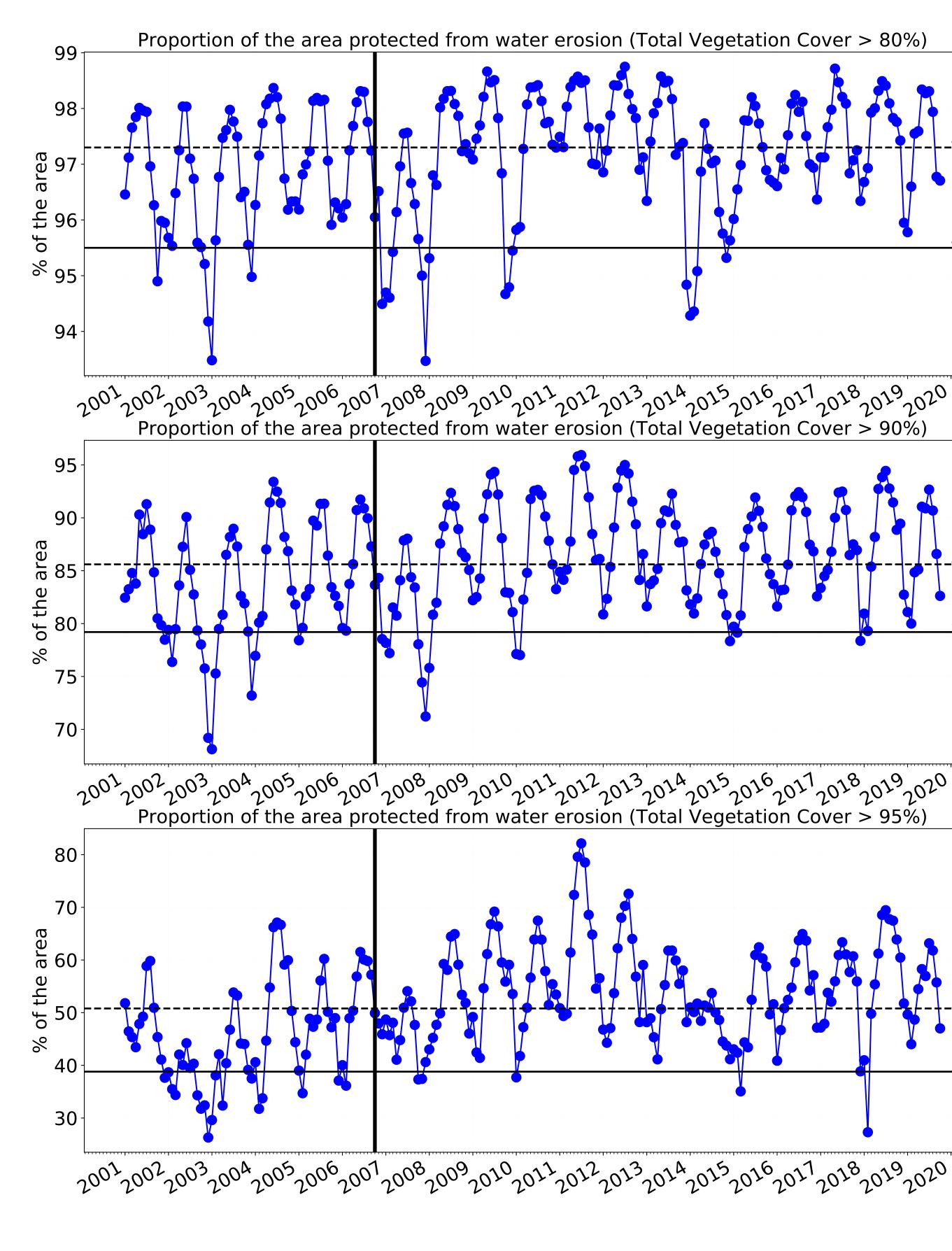


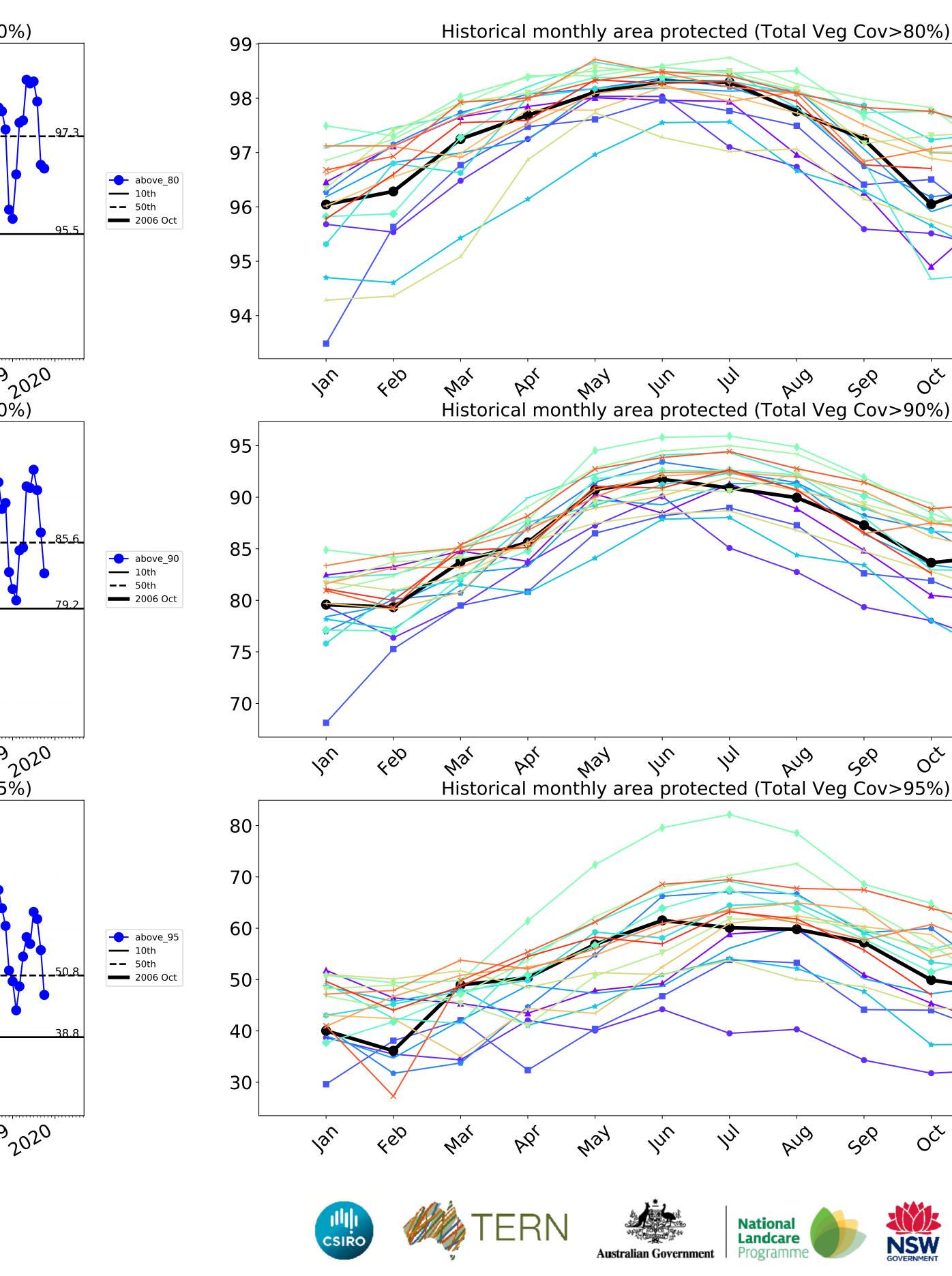


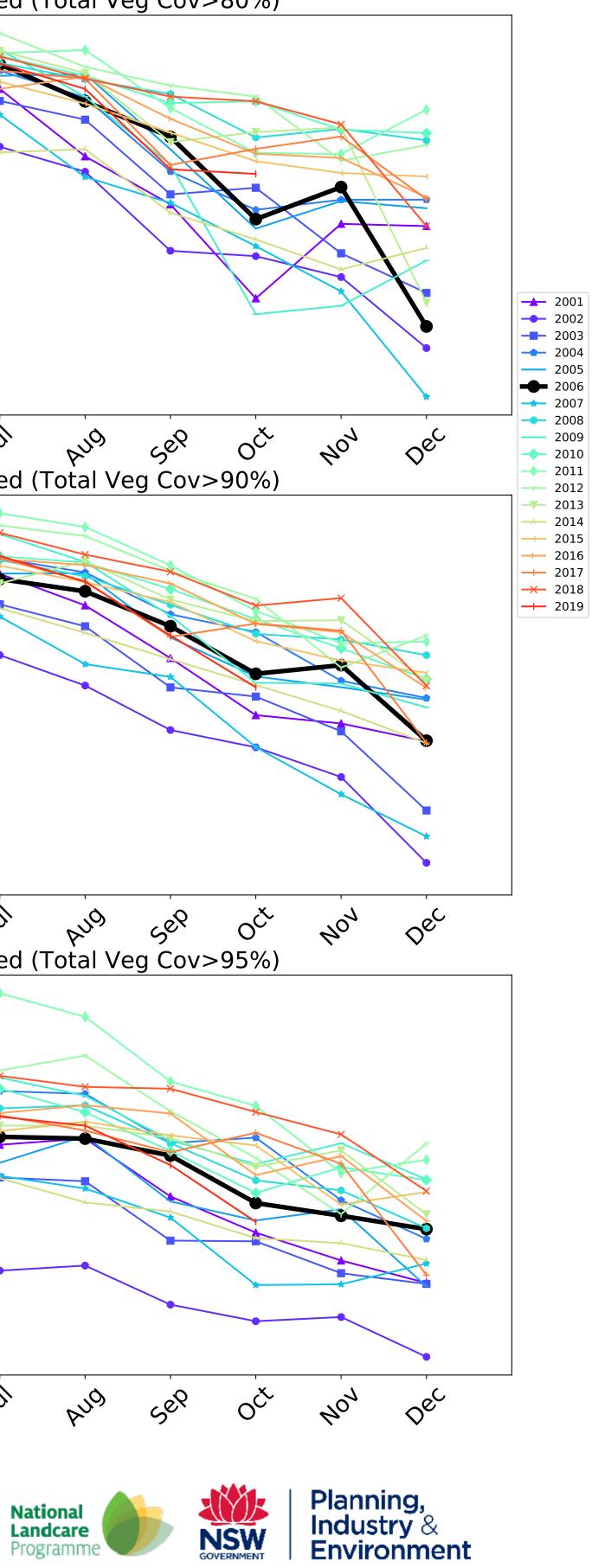
Wind erosion historical monthly area protected (Total Veg Cov >50%)

Water erosion historical monthly area protected (Total Veg Cov>70%)



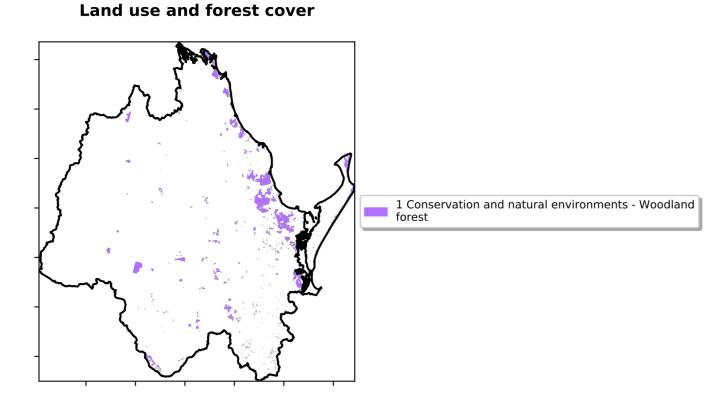




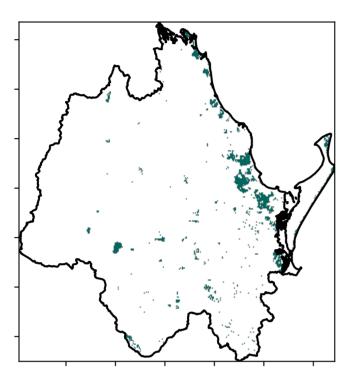


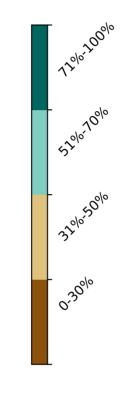
Conservation and natural environments Woodland forest

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

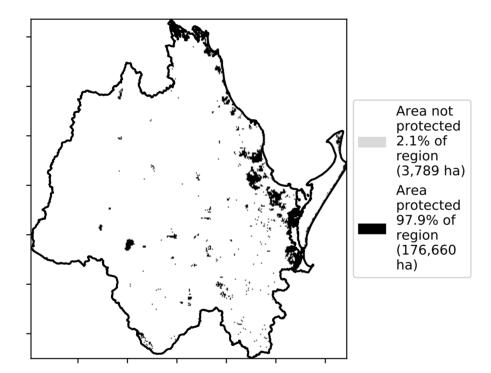


Total Vegetation Cover [%]

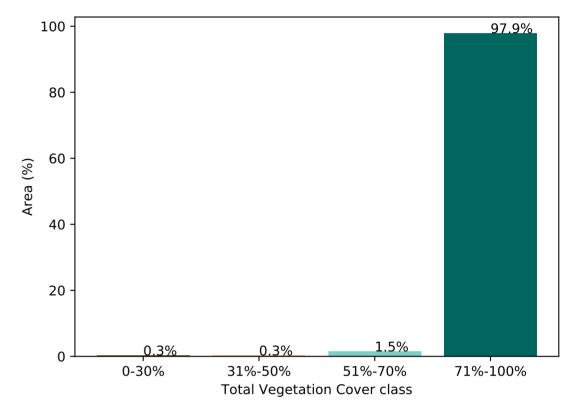




% Area protected from water erosion (>70%)



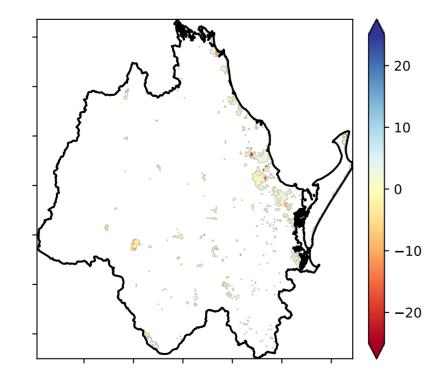




% Area protected from wind erosion (>50%)

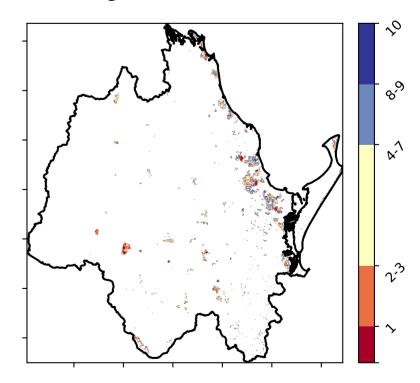


Total Vegetation Cover Anomaly [%]



Area not protected 1.0% of region (1,804 ha) Area protected 99.0% of region (178,645 ha)

Total Vegetation Cover Decile [%]





Deciles show where the pixel value lies in the

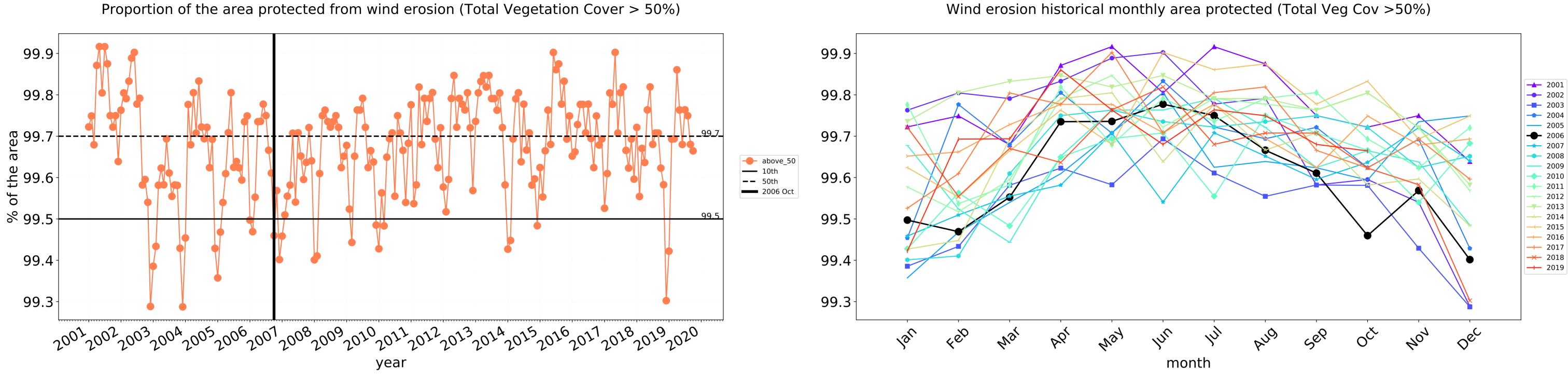
record, from highest to lowest, for that month. That is, red pixels are

in the lowest 10% of records for that month of

the map using baseline from 2001 to 2019.

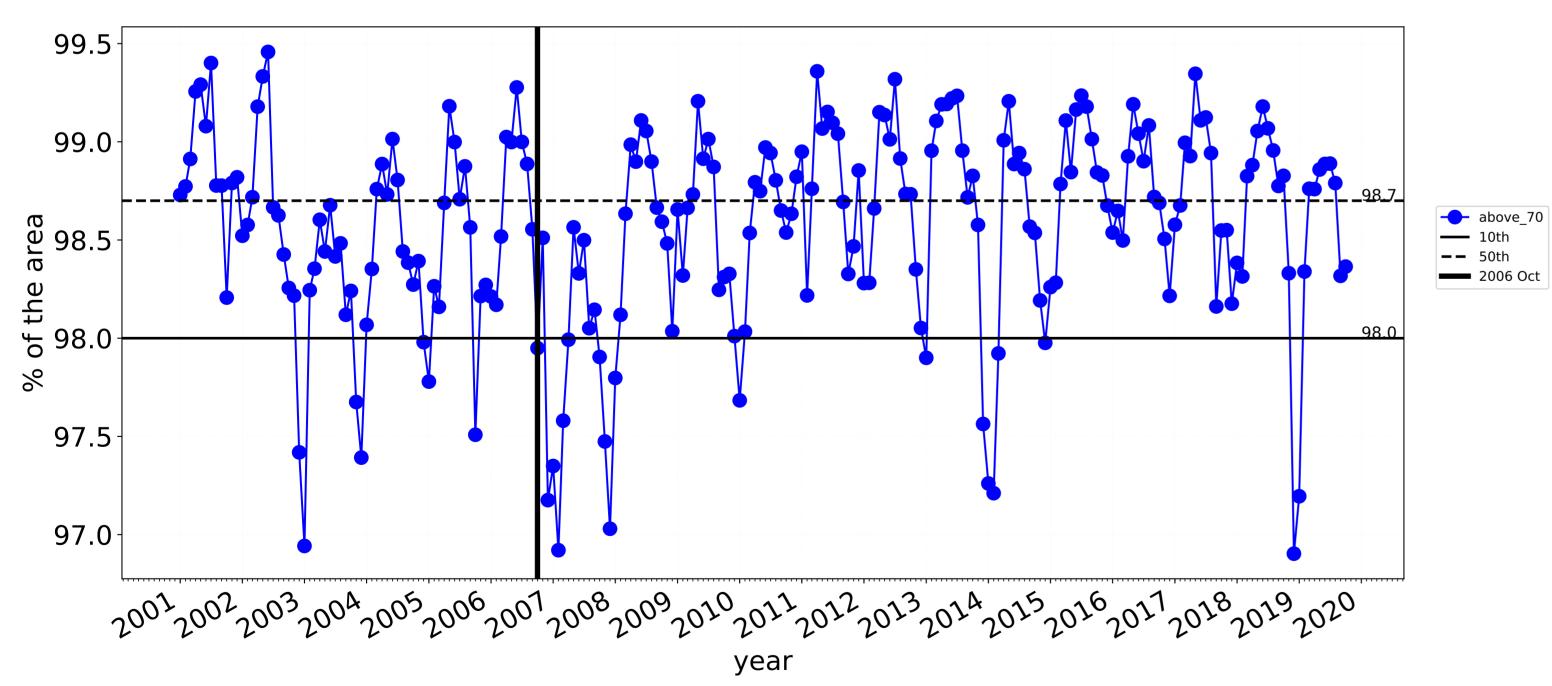
Anomaly show how many percetage points each pixel is from the mean That the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.





99.5



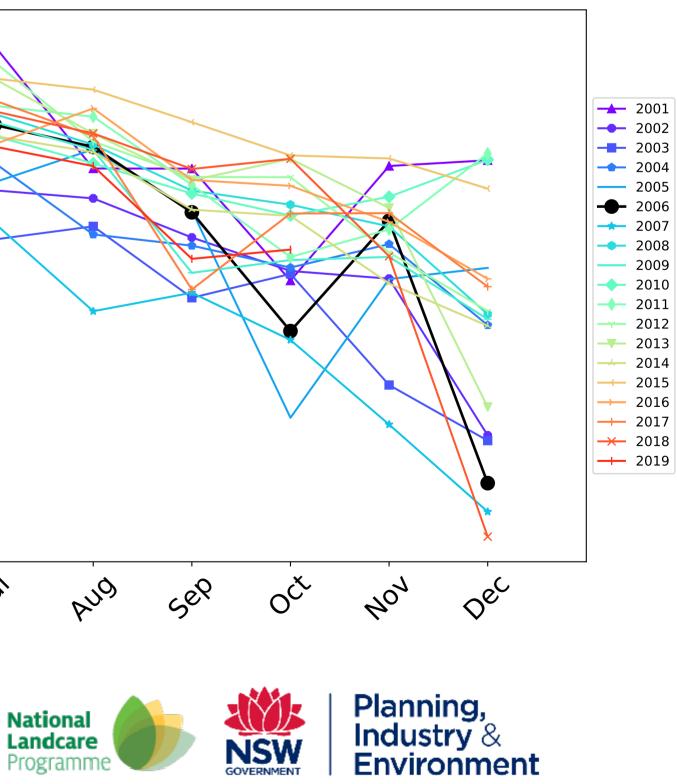


99.0 98.5 98.0 97.5 97.0 feb May In 1sr Mai PQ' 1/2/

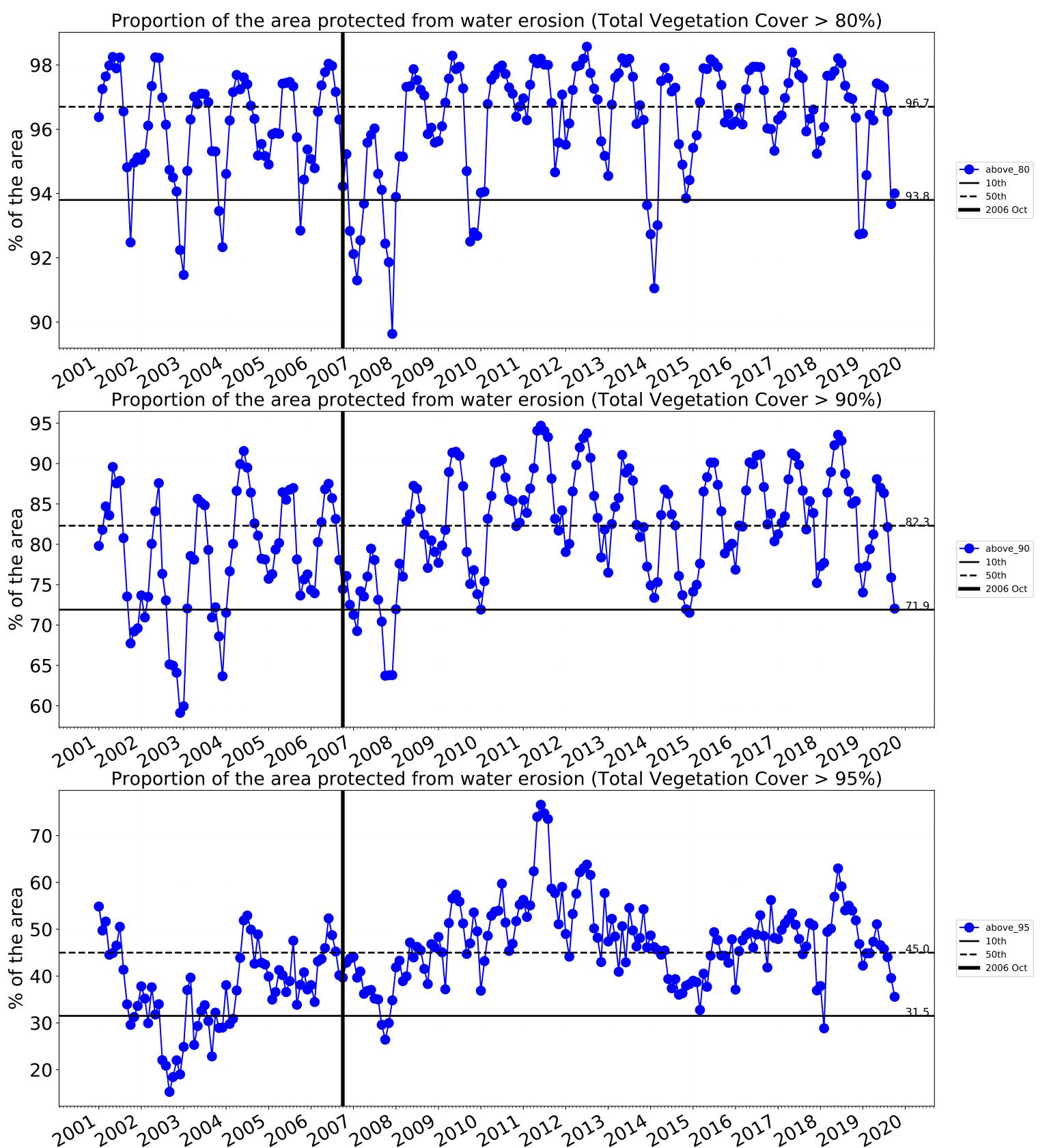
month

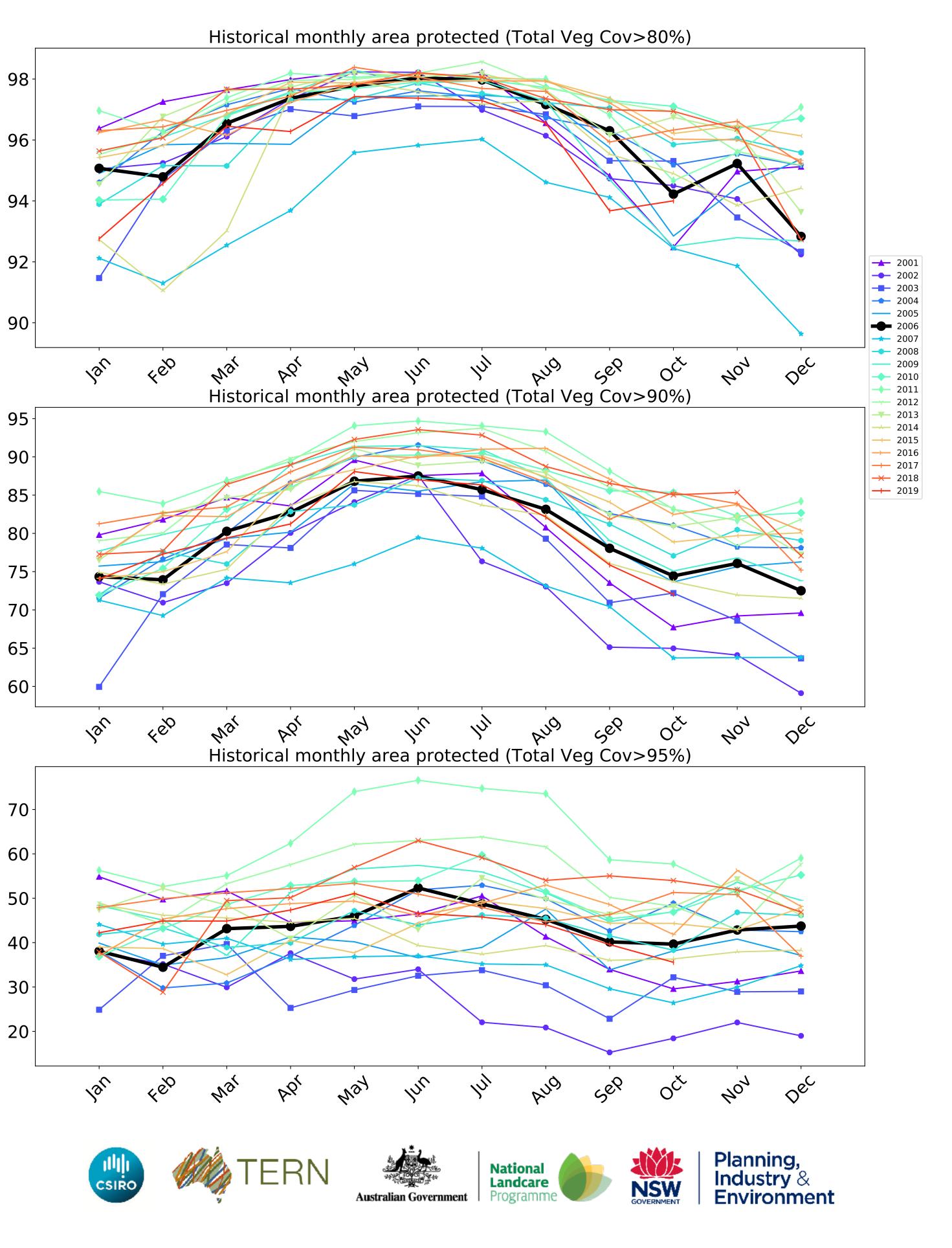


Water erosion historical monthly area protected (Total Veg Cov>70%)

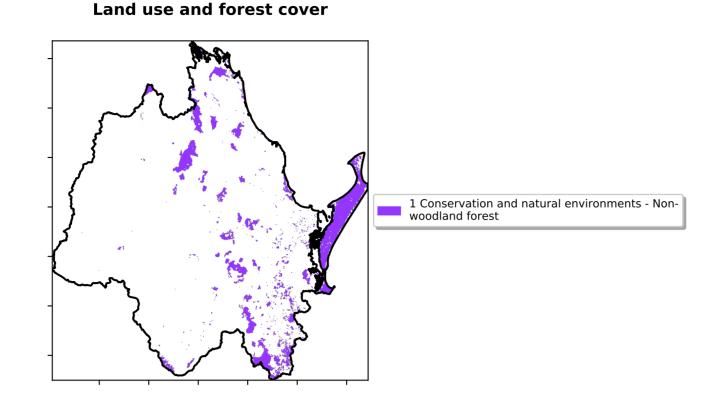


NSW GOVERNMENT





Conservation and natural environments Forest (non woodland)



120/0

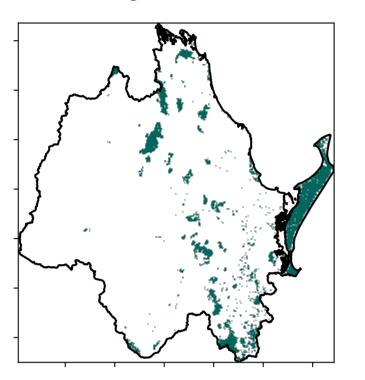
52%70%

32%50%

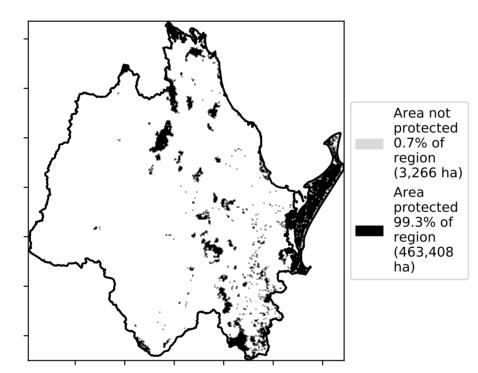
0-30%

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

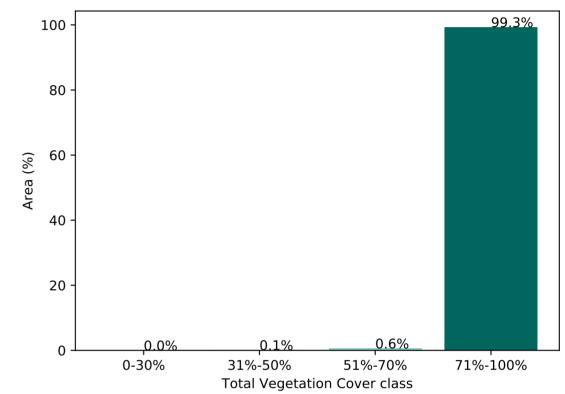
Total Vegetation Cover [%]



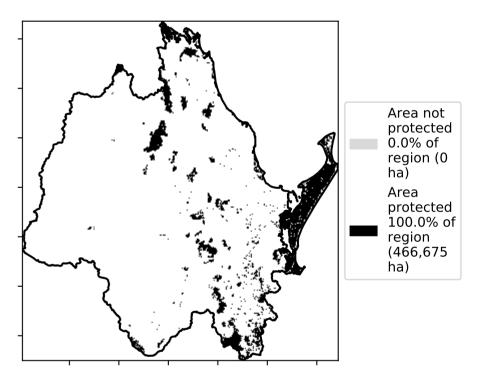
% Area protected from water erosion (>70%)





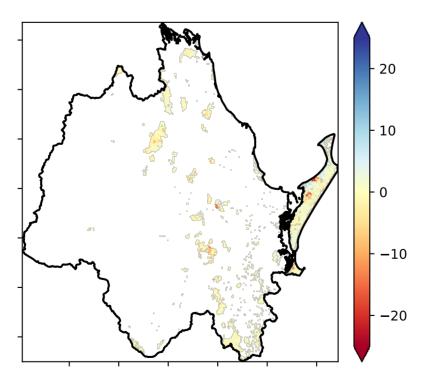


% Area protected from wind erosion (>50%)

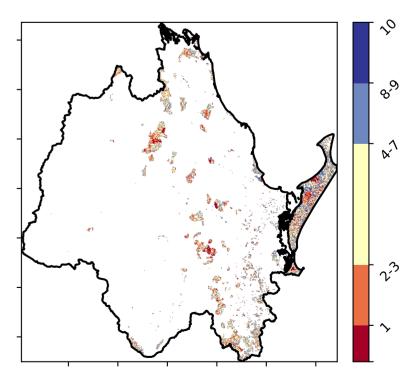


Total Vegetation Cover Anomaly [%]

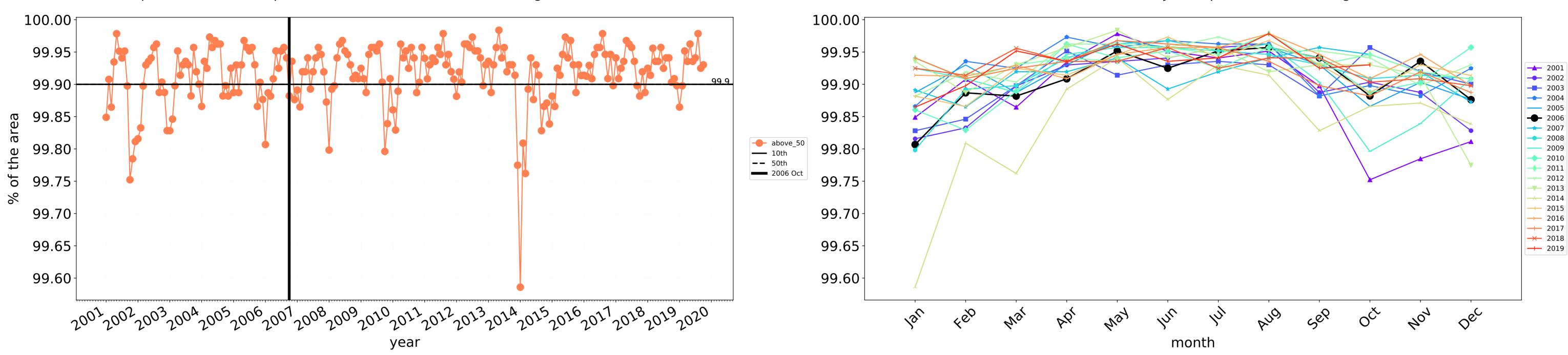
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019. **Total Vegetation Cover Decile [%]**

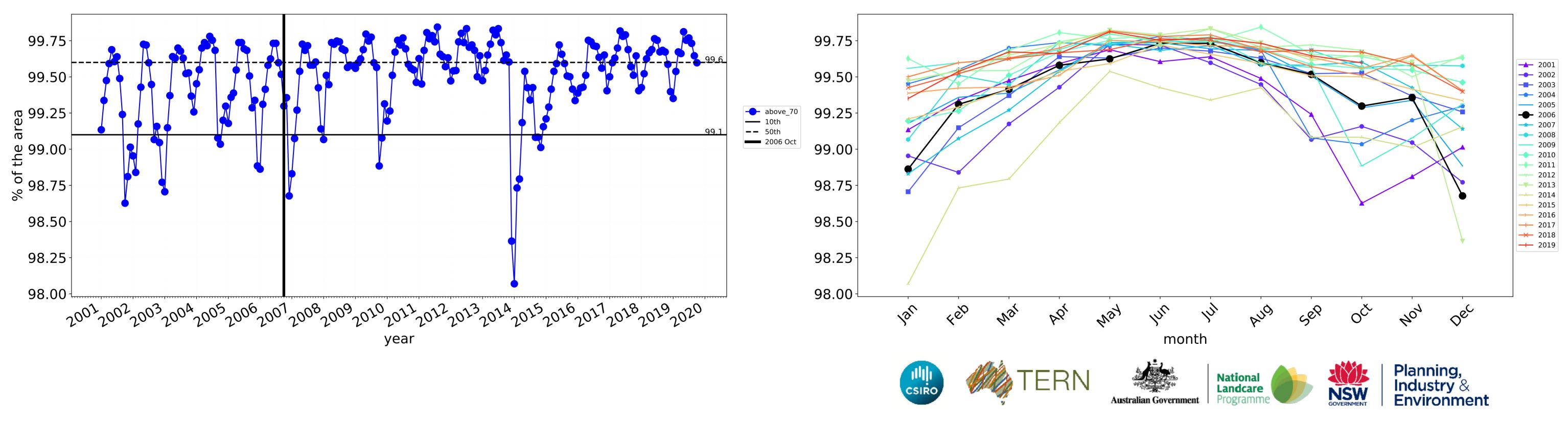






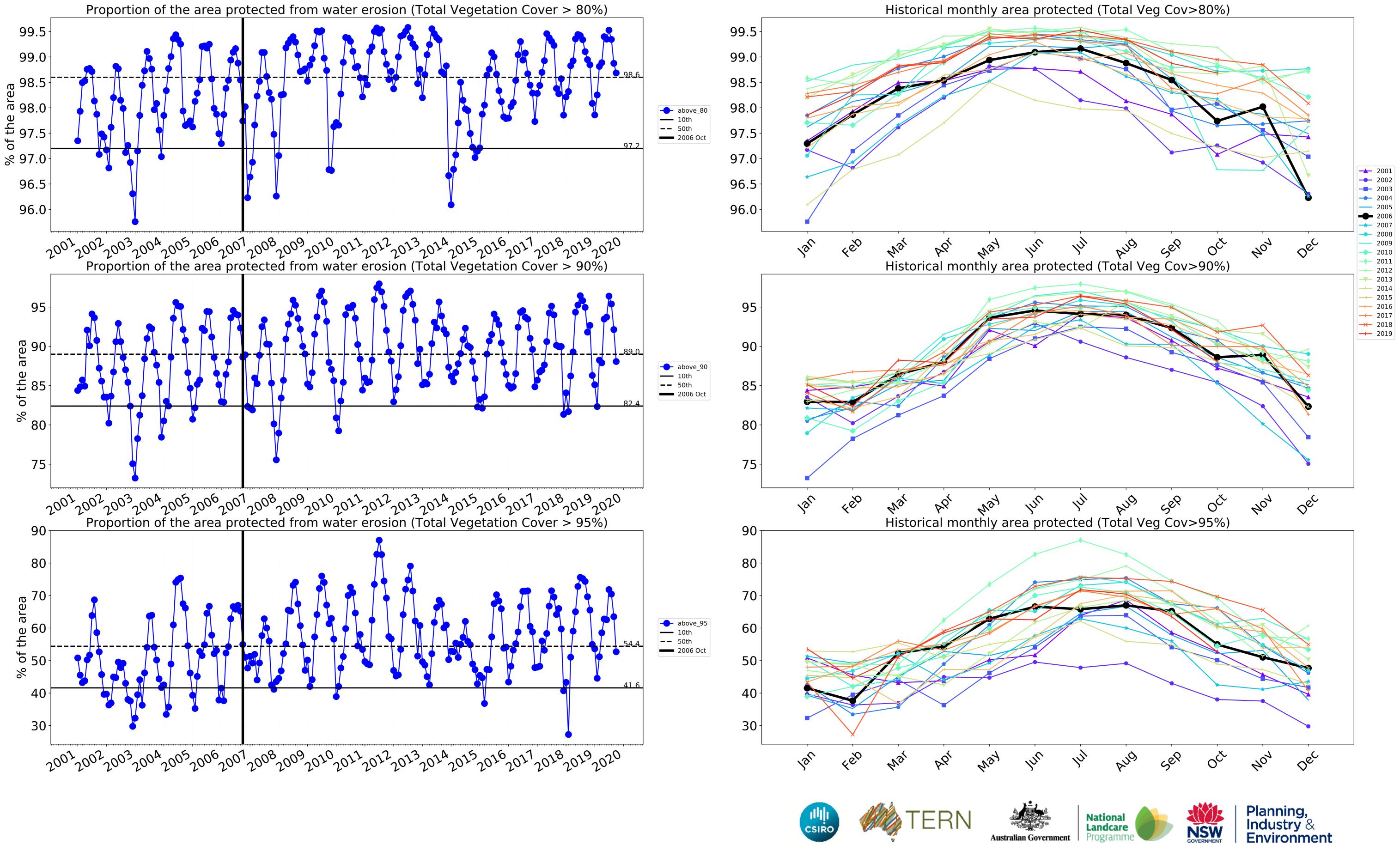
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



Water erosion historical monthly area protected (Total Veg Cov>70%)

Wind erosion historical monthly area protected (Total Veg Cov >50%)



Agriculture

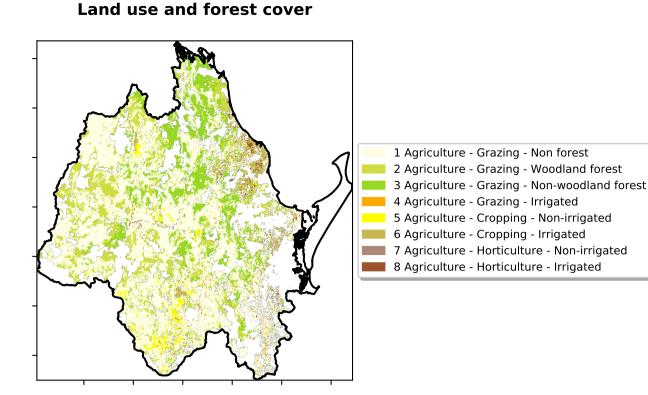
20

10

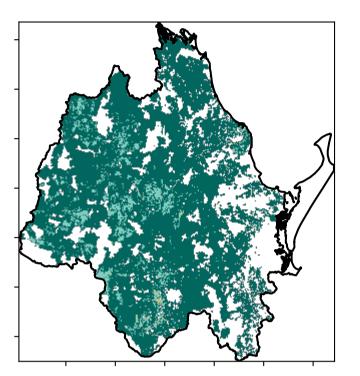
0

1

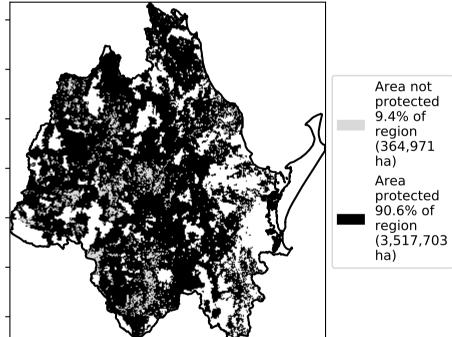
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

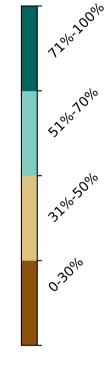


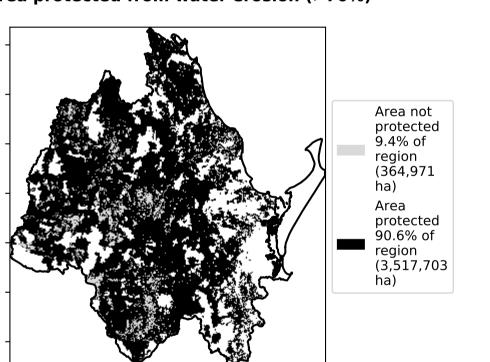
Total Vegetation Cover [%]

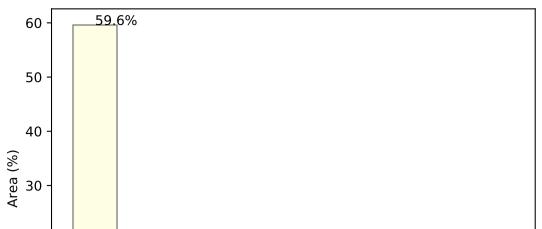


% Area protected from water erosion (>70%)









<u>18.</u>3%

2

15.3%

3

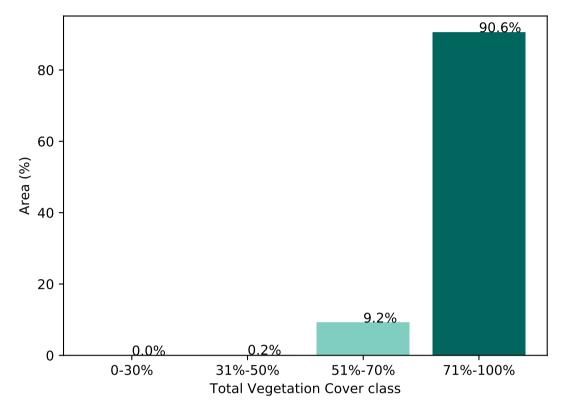
Proportion of each land class in area

Proportion of vegetation cover class in area

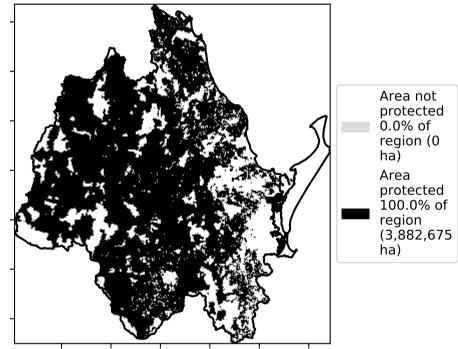
Land use class

5

4

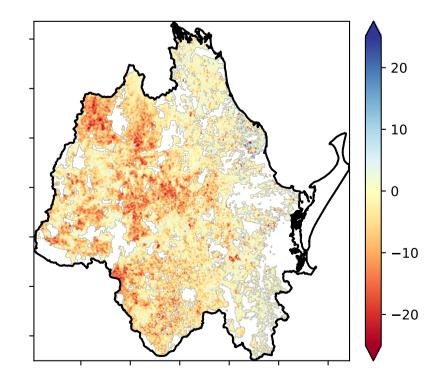


% Area protected from wind erosion (>50%)



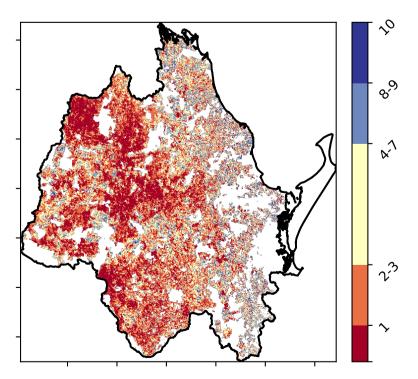
0.6%

Total Vegetation Cover Anomaly [%]



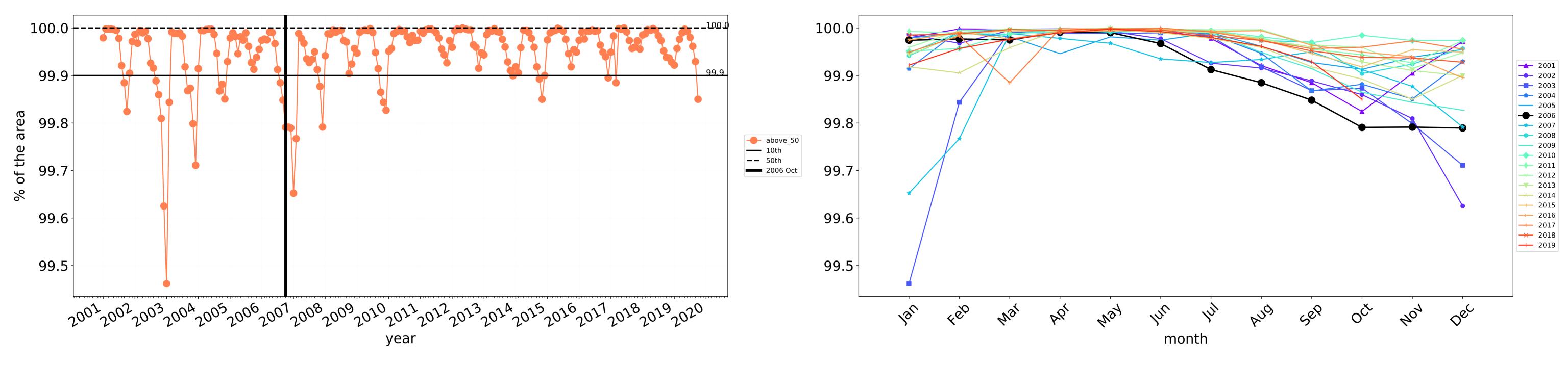
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]



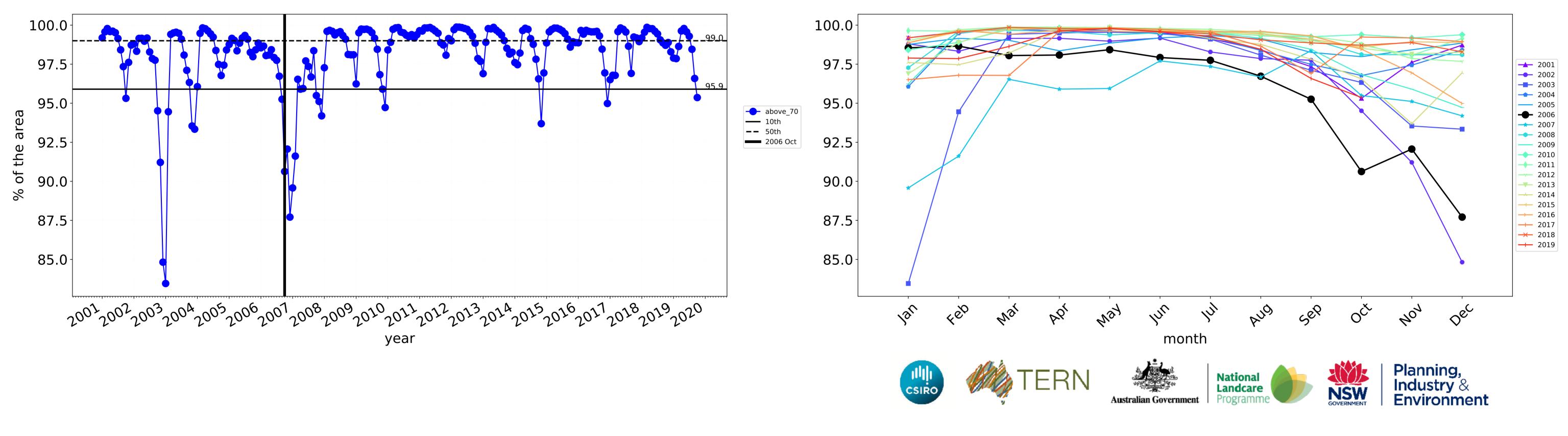


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

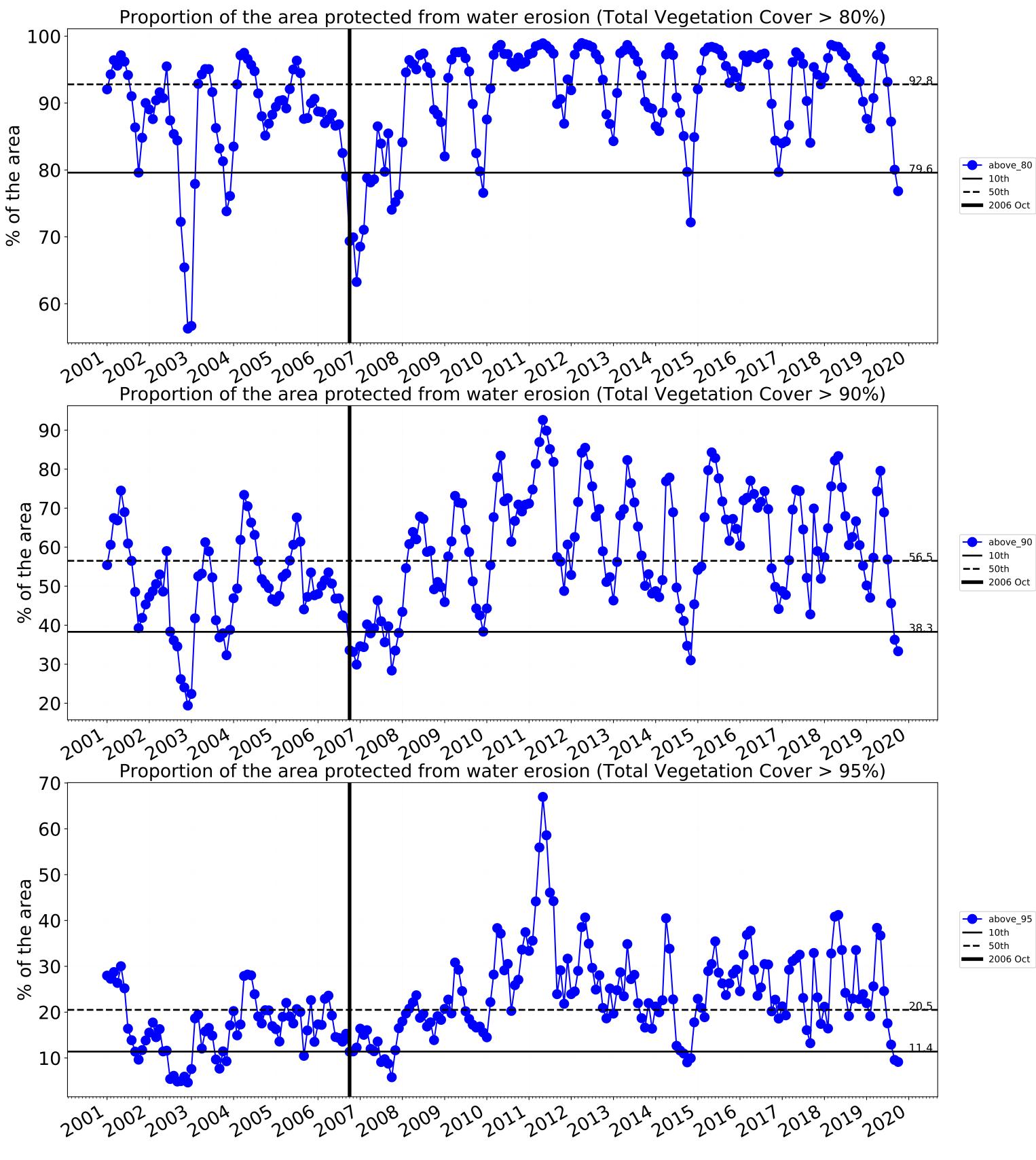


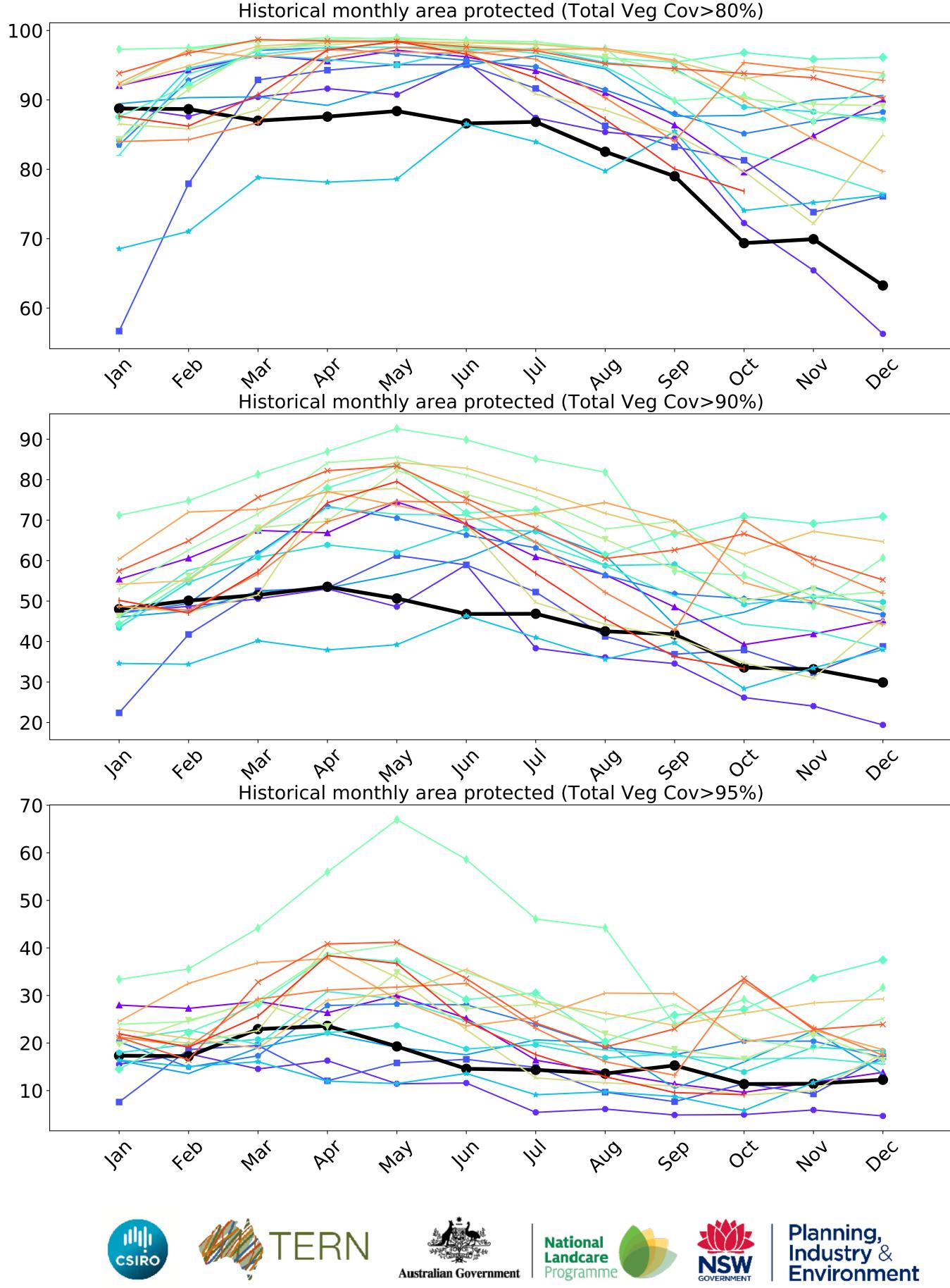
Agriculture timeseries



Wind erosion historical monthly area protected (Total Veg Cov >50%)

Water erosion historical monthly area protected (Total Veg Cov>70%)

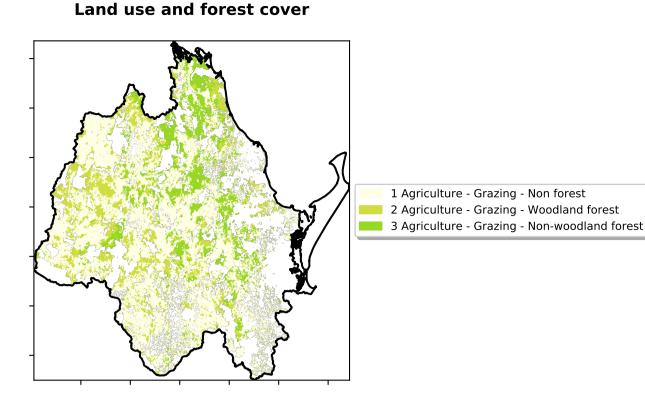




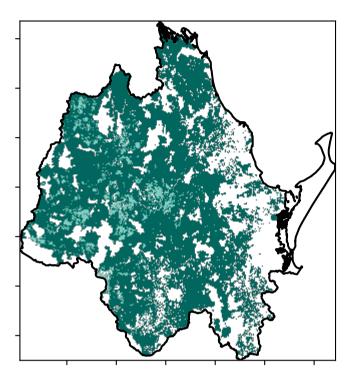
___ 2001 --- 2002 **—** 2003 **---** 2004 ____ 2005 **—** 2006 **---** 2007 **-** 2008 2009 **-** 2010 → 2011 → 2012 **—** 2013 - 2014 **←** 2015 **→** 2016 <mark>→</mark> 2017 → 2018 → 2019

Grazing

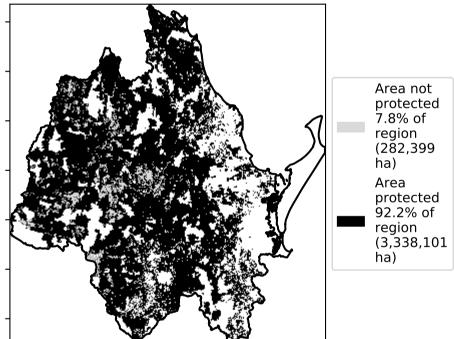
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

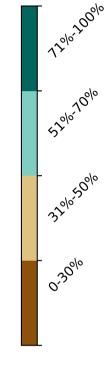


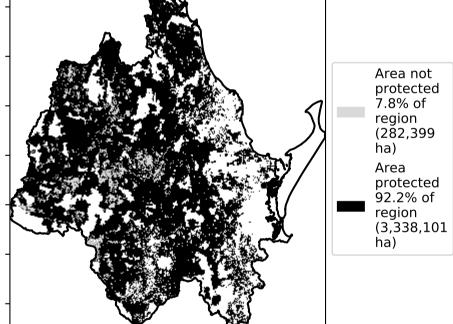
Total Vegetation Cover [%]

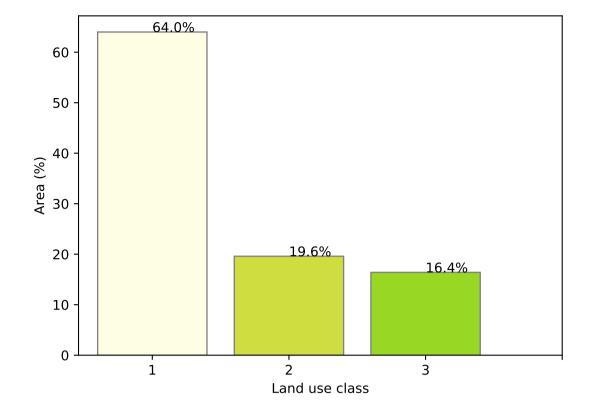


% Area protected from water erosion (>70%)



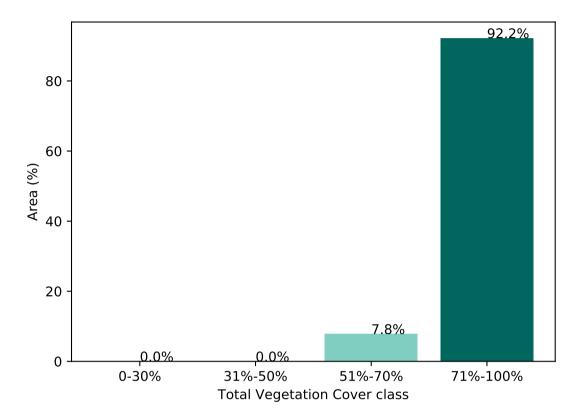




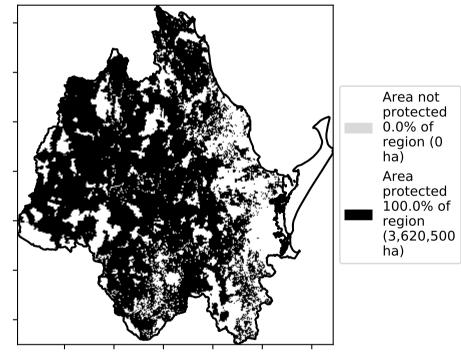


Proportion of each land class in area

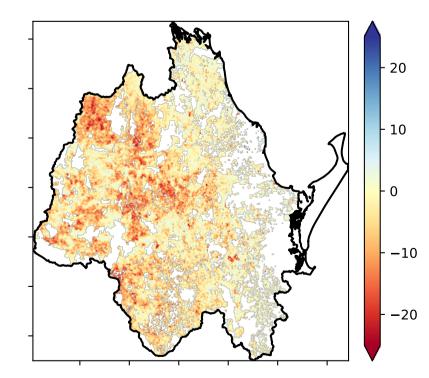
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

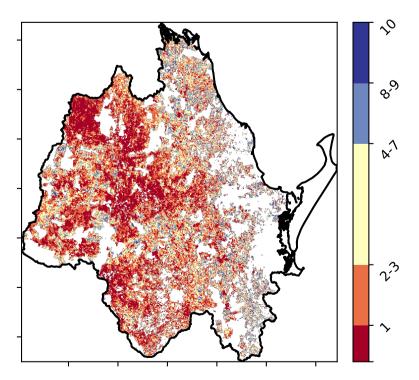


Total Vegetation Cover Anomaly [%]



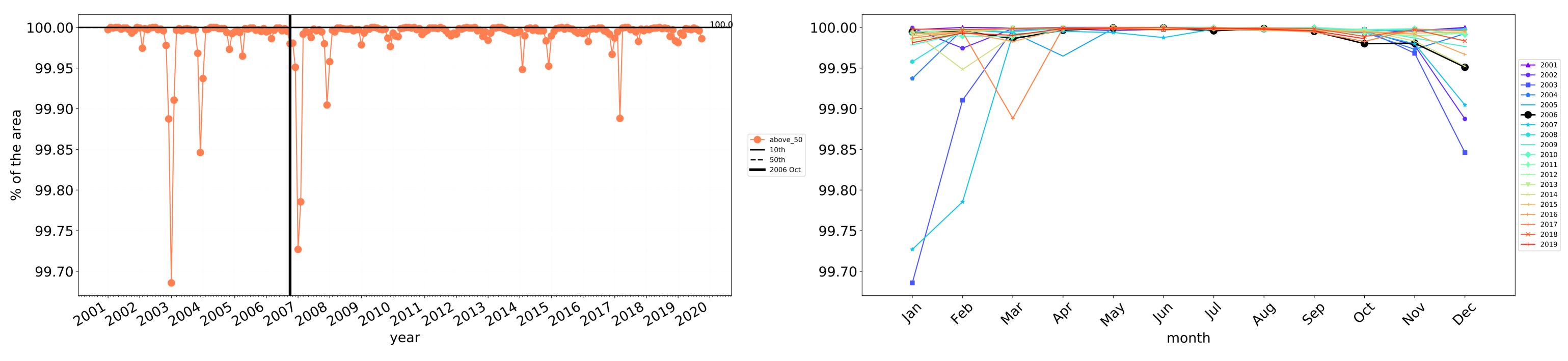
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]



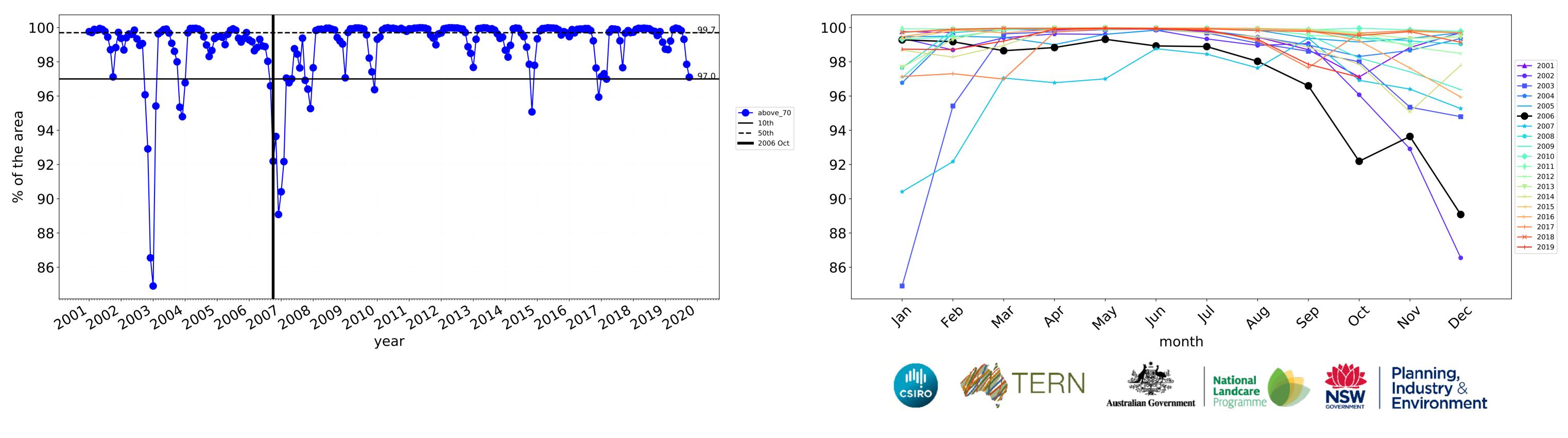


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

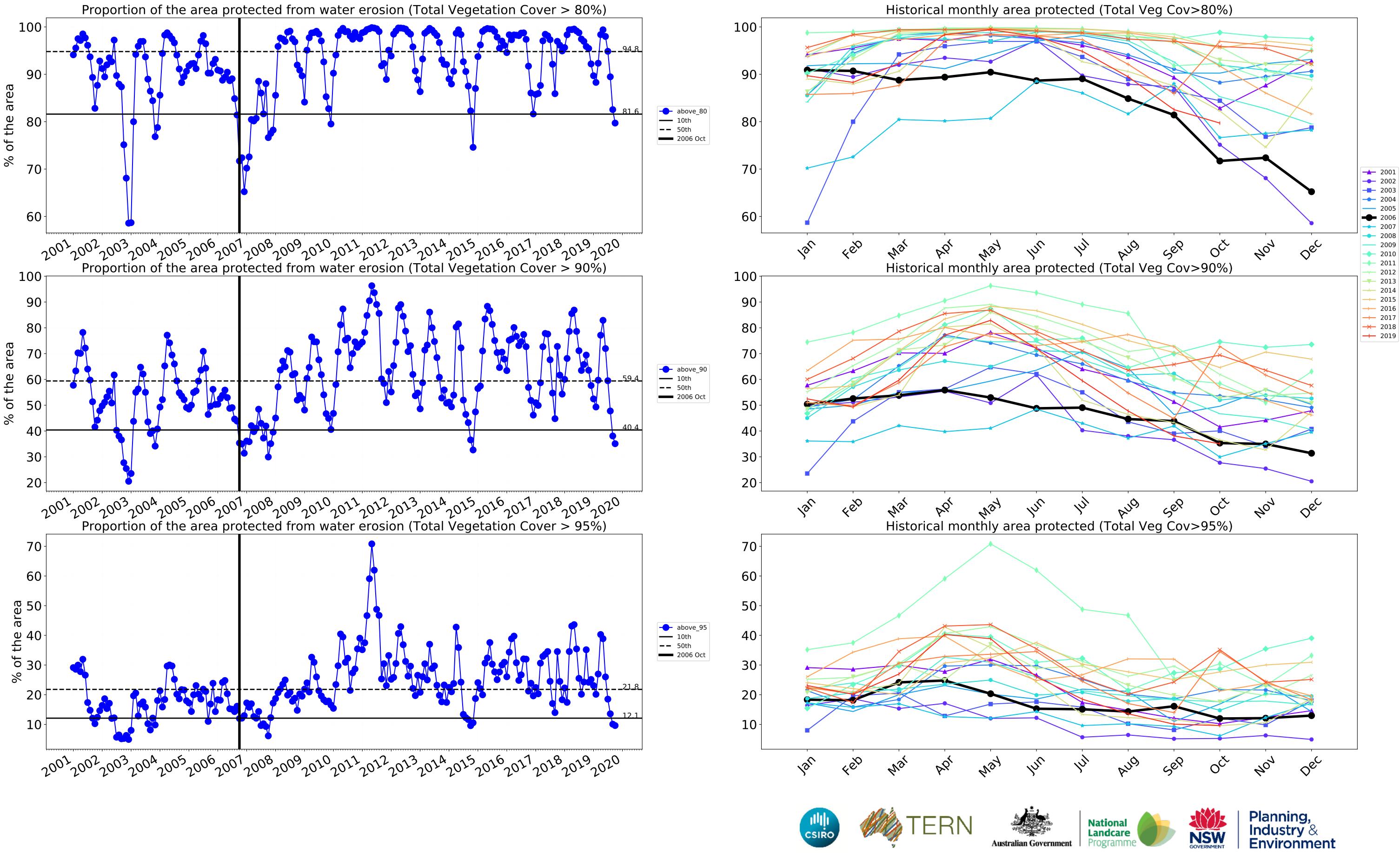
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)





Wind erosion historical monthly area protected (Total Veg Cov >50%)

Water erosion historical monthly area protected (Total Veg Cov>70%)



Grazing non forest

Land use and forest cover

Catchment Scale Land Use and Forests of Australia (2018)

Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

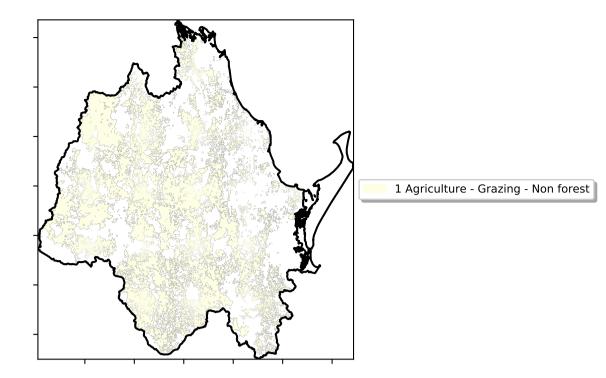
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels

are about 20% lower than the

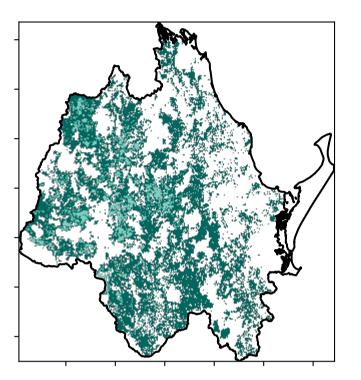
mean of that pixel. The mean

is only for the month of the map using baseline from 2001 to 2019.

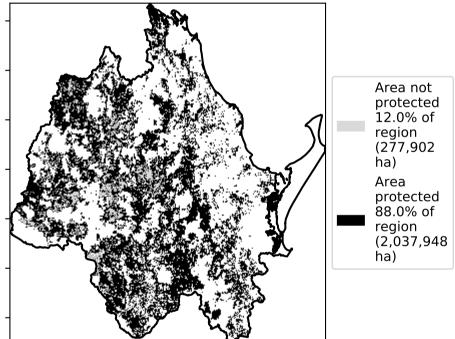
Derived from

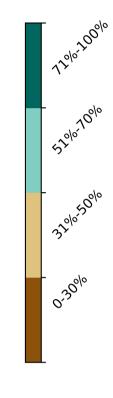


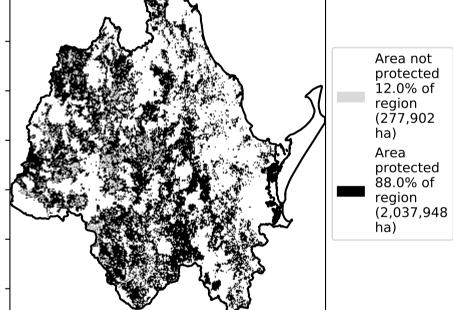
Total Vegetation Cover [%]



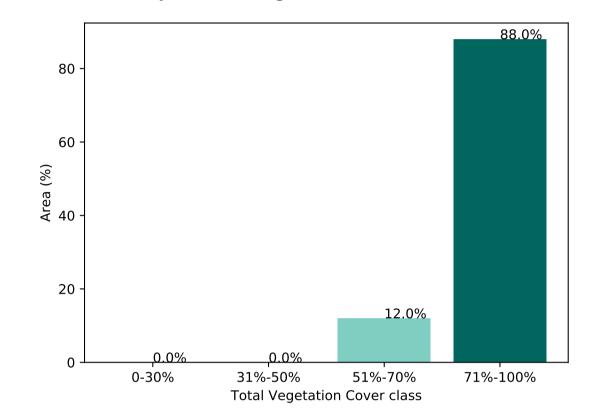




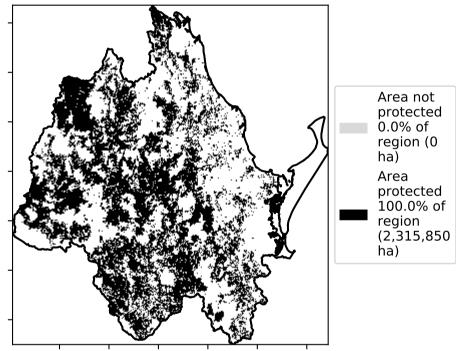




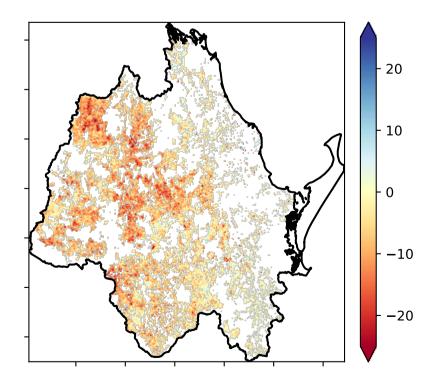
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

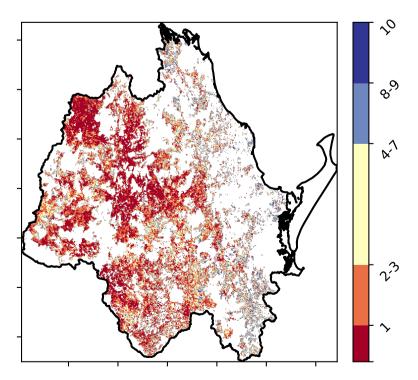


Total Vegetation Cover Anomaly [%]

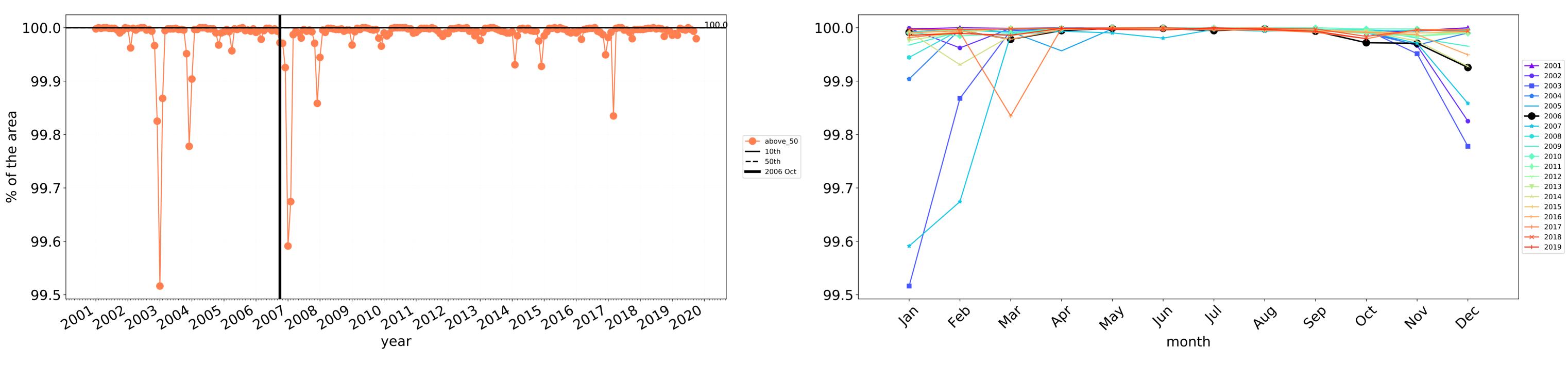


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]

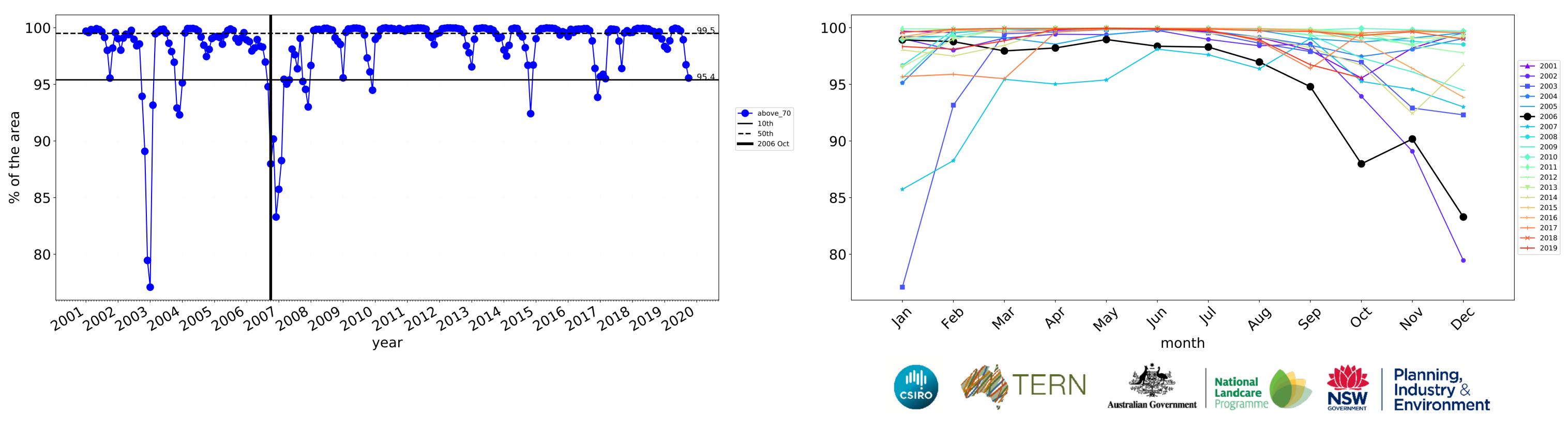


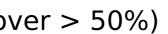




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

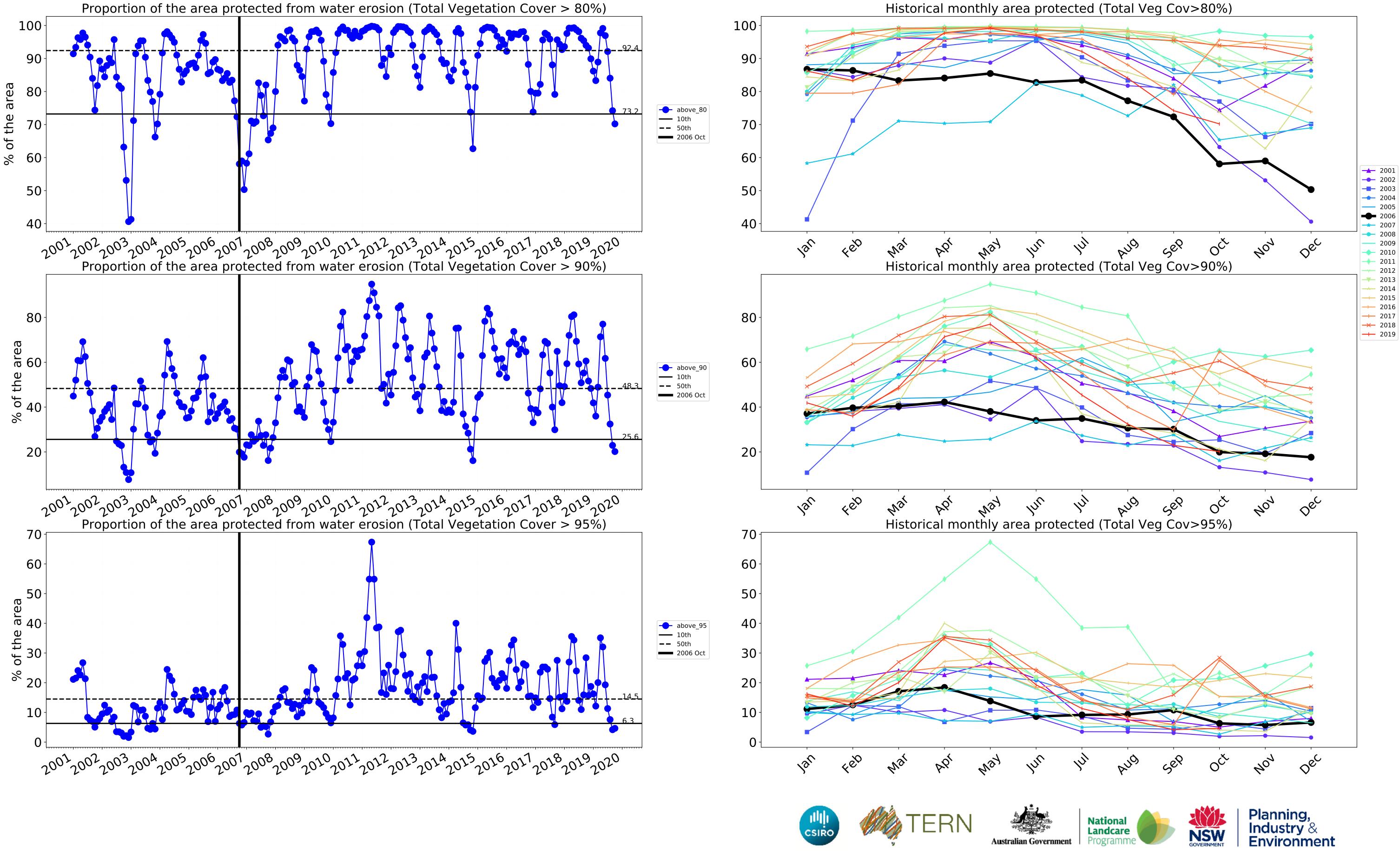
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)





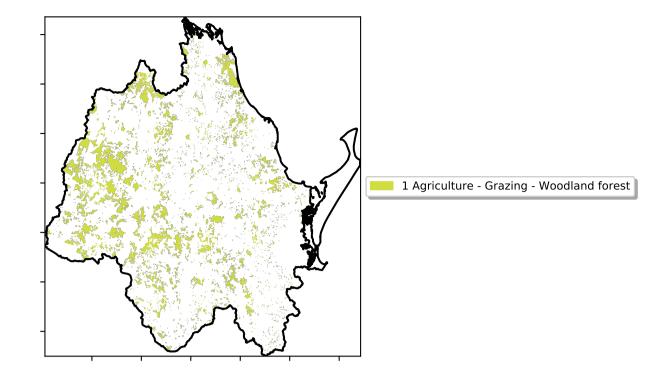
Wind erosion historical monthly area protected (Total Veg Cov >50%)



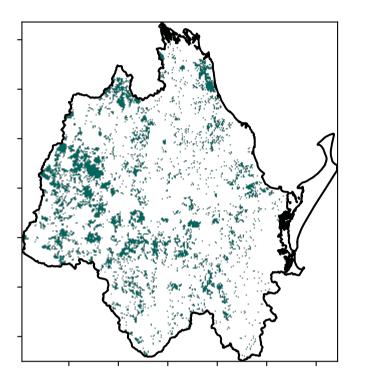


Grazing Woodland forest

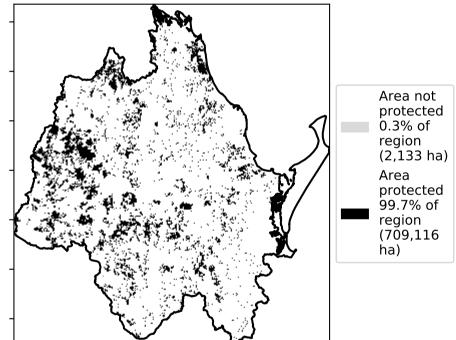
Land use and forest cover

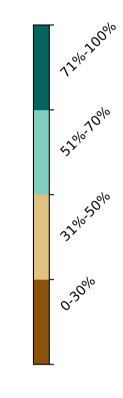


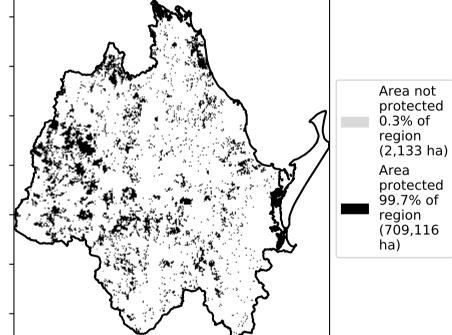
Total Vegetation Cover [%]



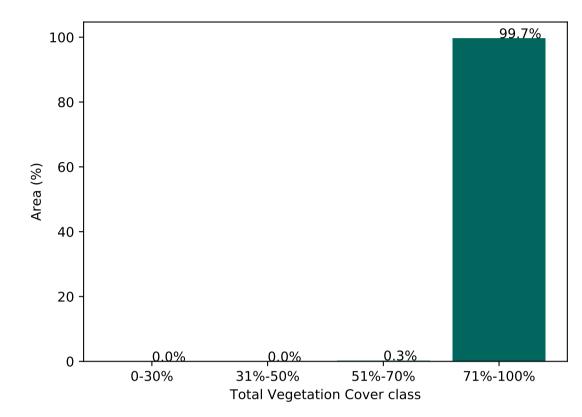




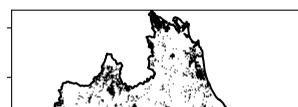




Proportion of vegetation cover class in area

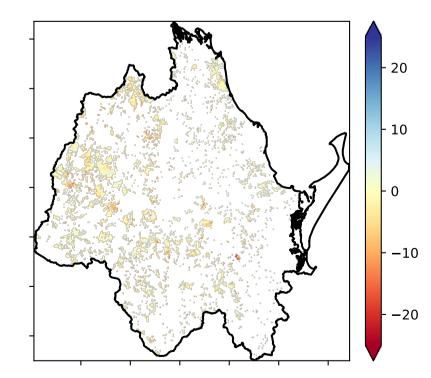


% Area protected from wind erosion (>50%)



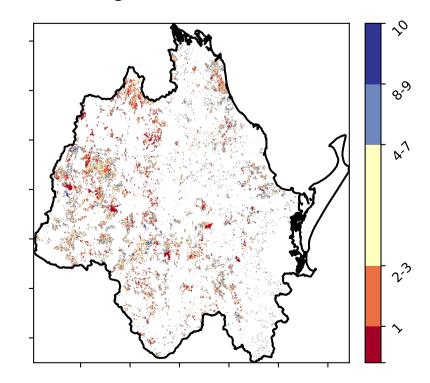
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover Anomaly [%]



Area not protected 0.0% of region (0 ha) Area protected 100.0% of region (711,250 ha)

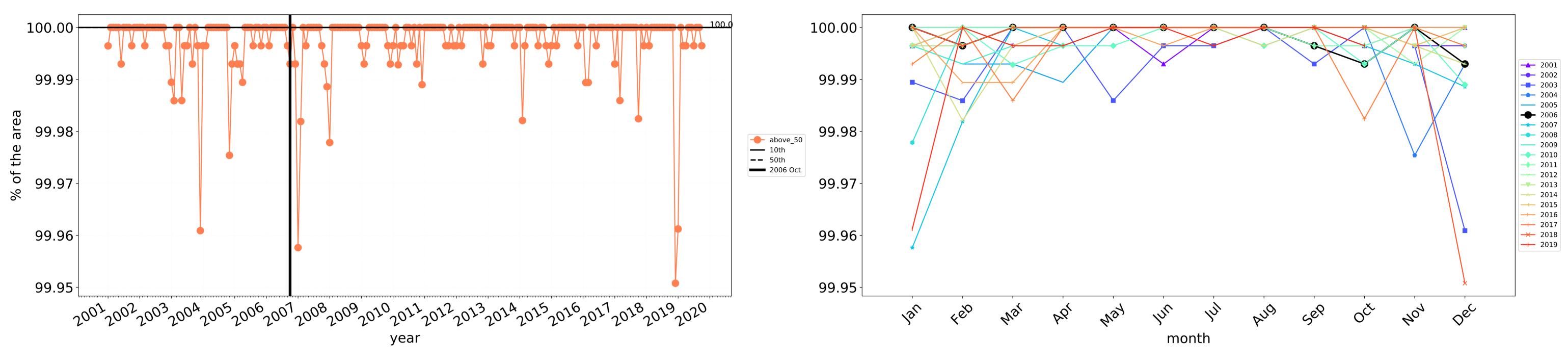
Total Vegetation Cover Decile [%]





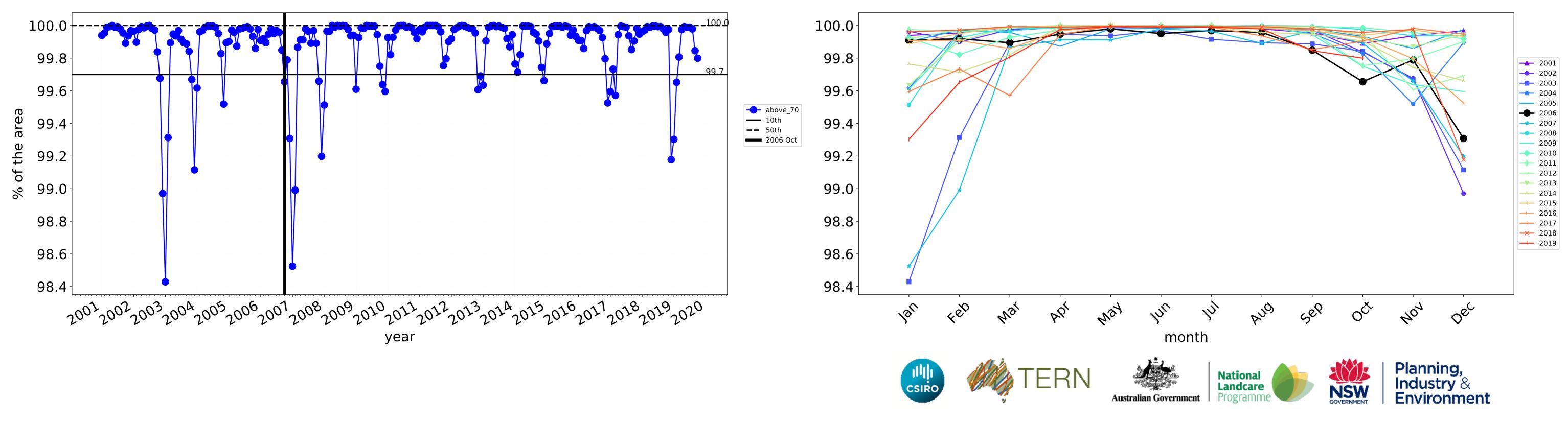
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

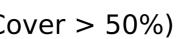
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

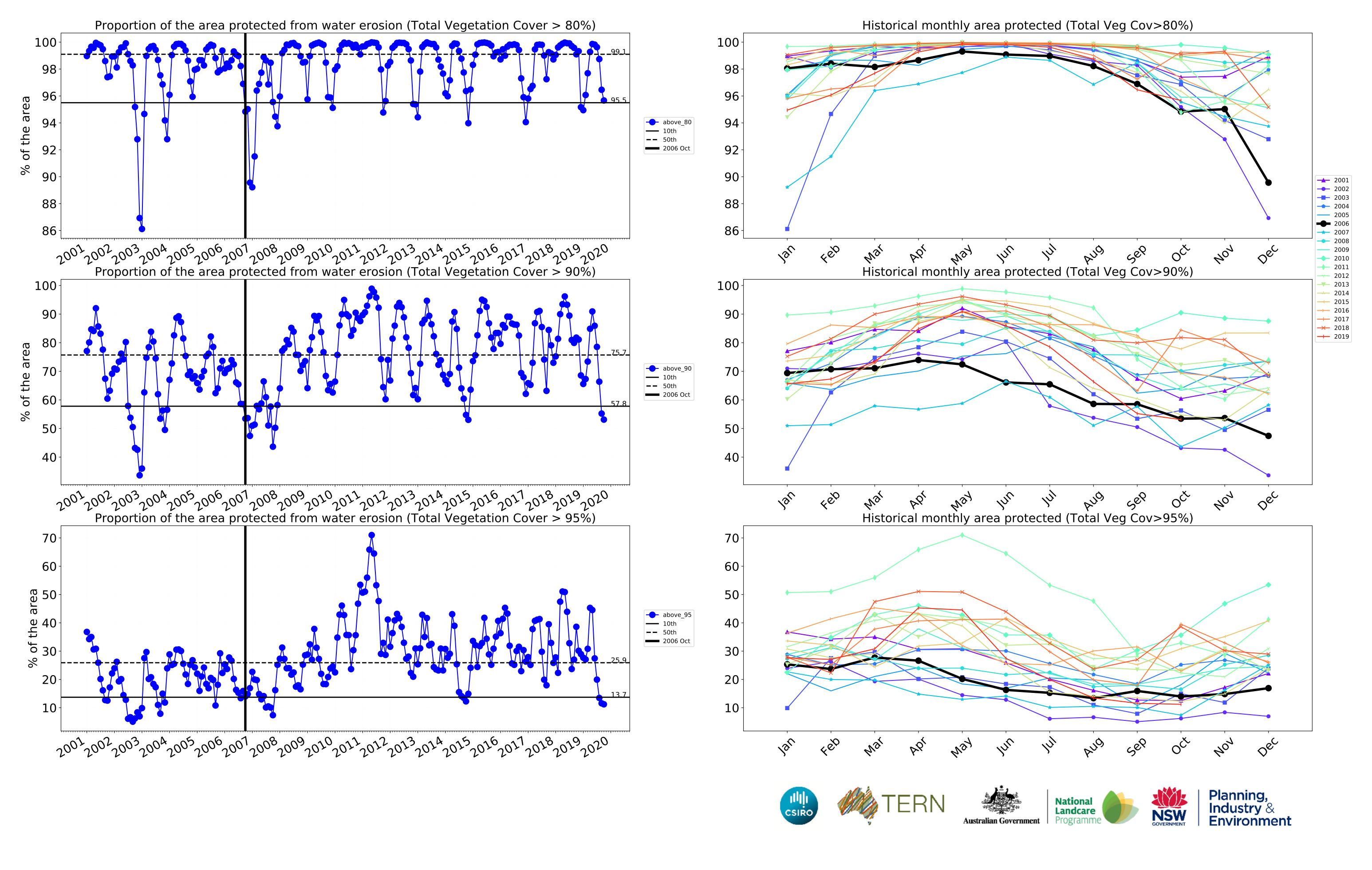
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)





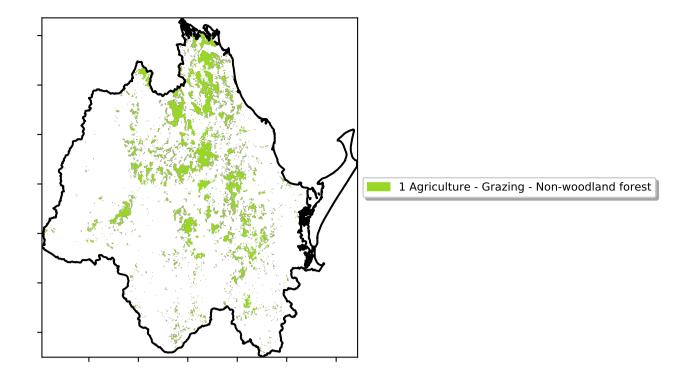
Wind erosion historical monthly area protected (Total Veg Cov >50%)



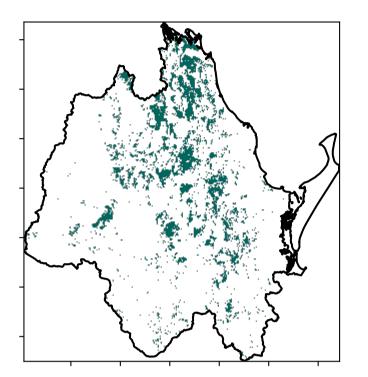


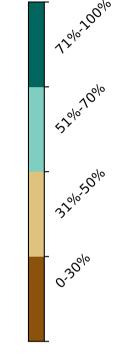
Grazing - Forest (non woodland)

Land use and forest cover

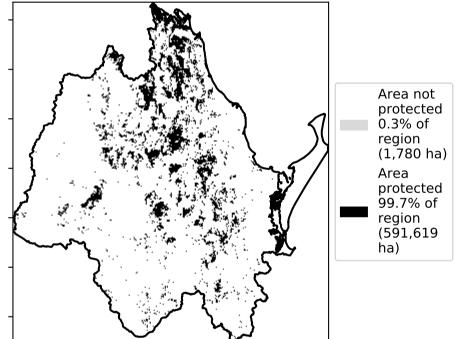


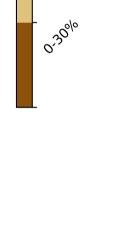
Total Vegetation Cover [%]



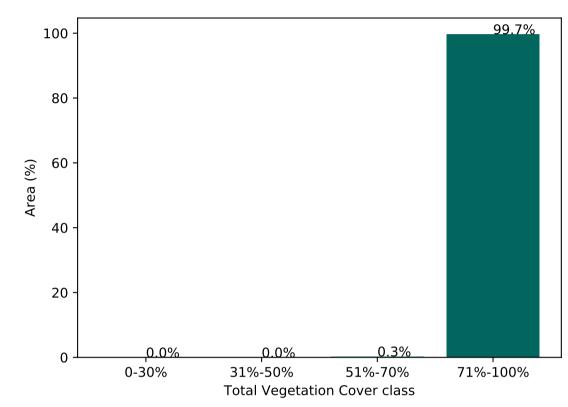


% Area protected from water erosion (>70%)





Proportion of vegetation cover class in area

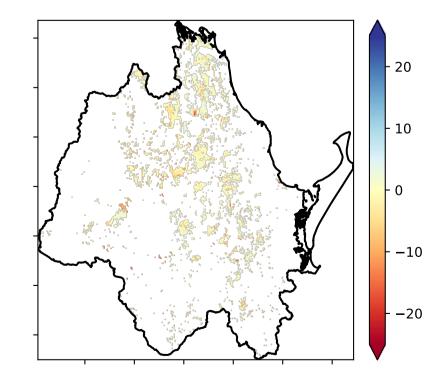


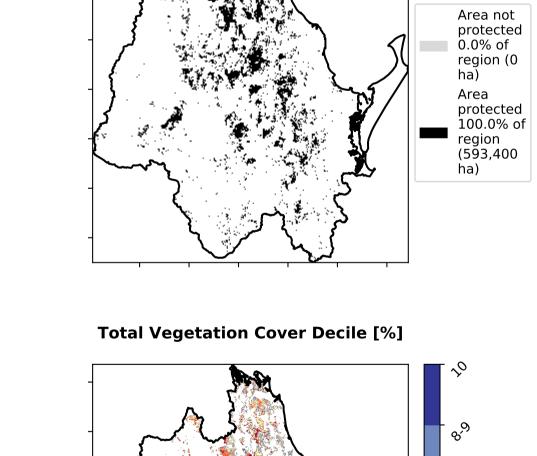
% Area protected from wind erosion (>50%)



Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover Anomaly [%]





Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of

x.1 2³⁵

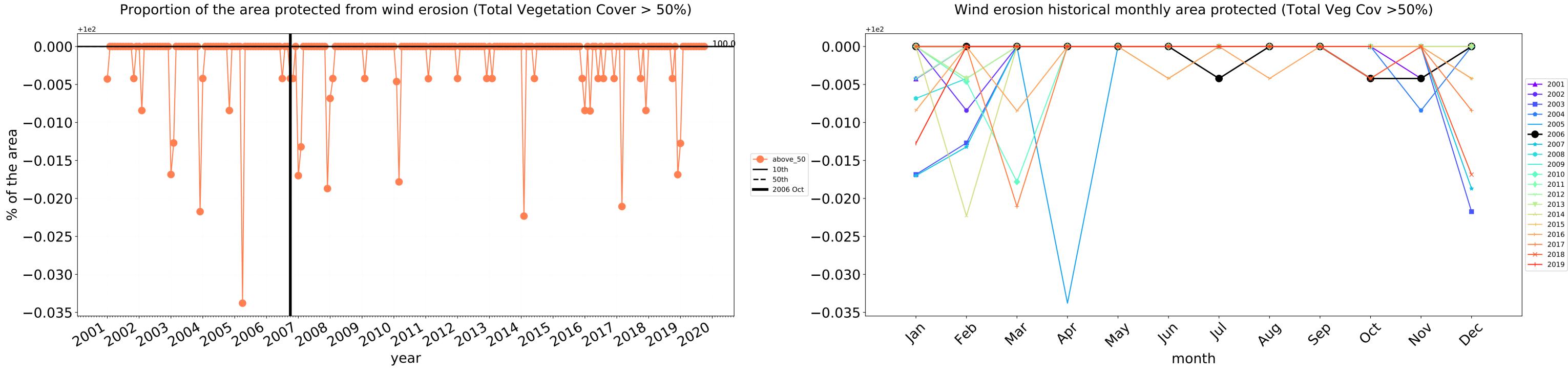


records for that month of

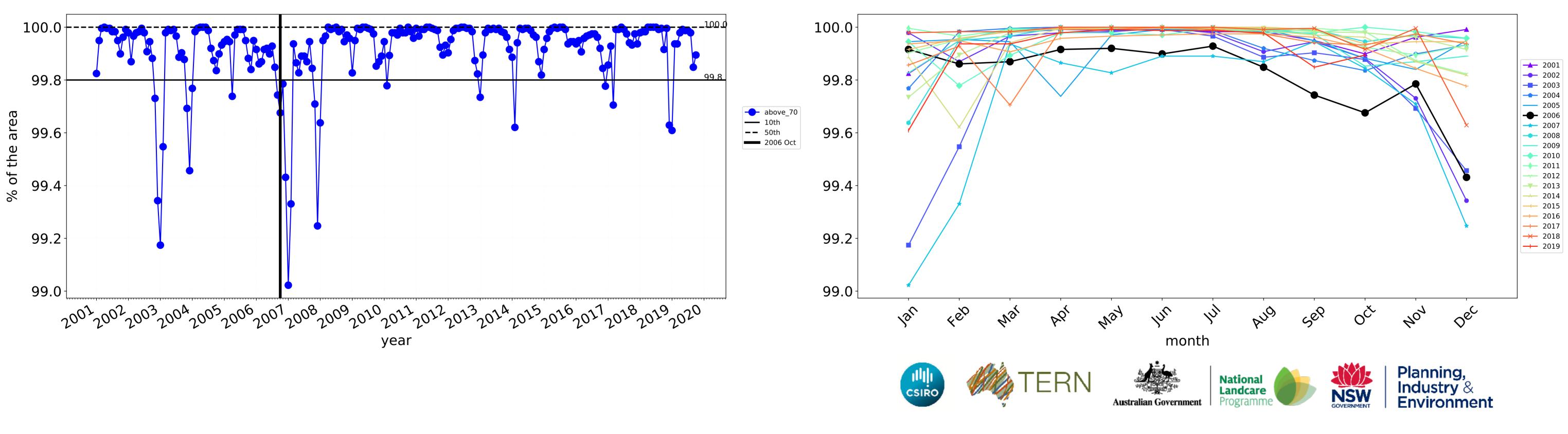
the map using baseline from 2001 to 2019.

Anomaly show how many percetage points each pixel is from the mean That the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map from 2001 to 2019.



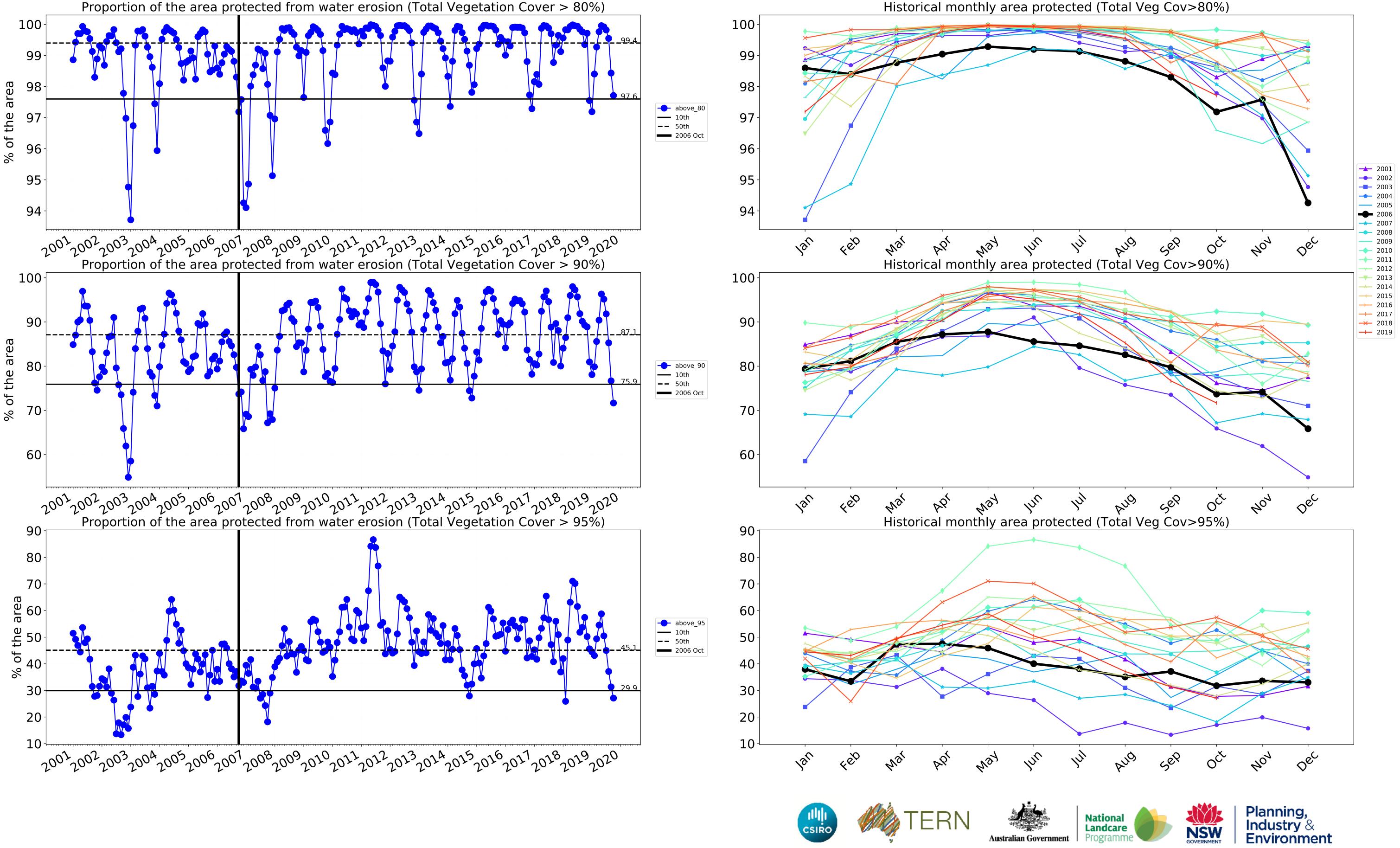


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



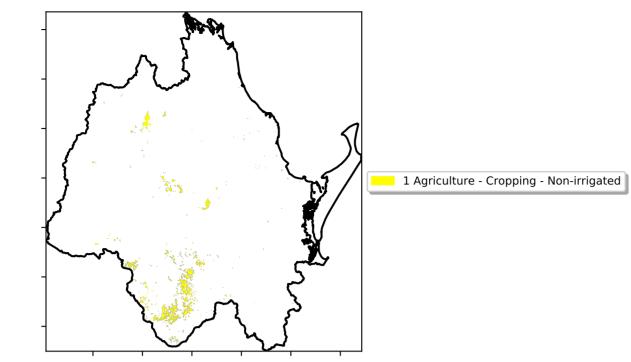
Grazing - Forest (non woodland) timeseries

Water erosion historical monthly area protected (Total Veg Cov>70%)

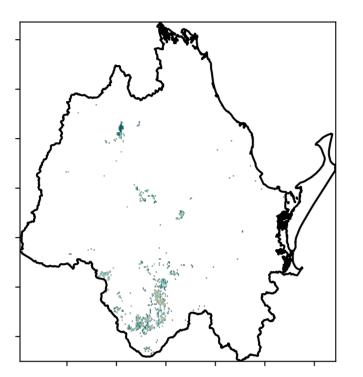


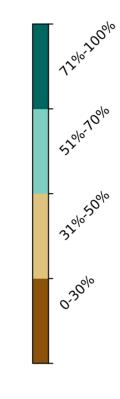
Cropping

Land use and forest cover

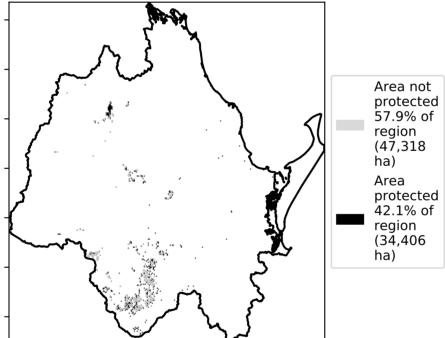


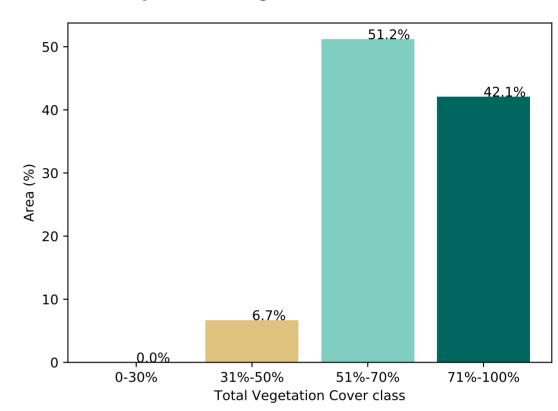
Total Vegetation Cover [%]





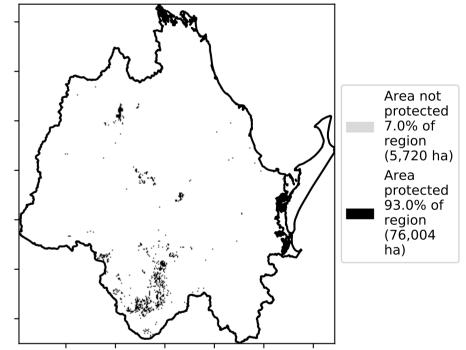
% Area protected from water erosion (>70%)





Proportion of vegetation cover class in area

% Area protected from wind erosion (>50%)



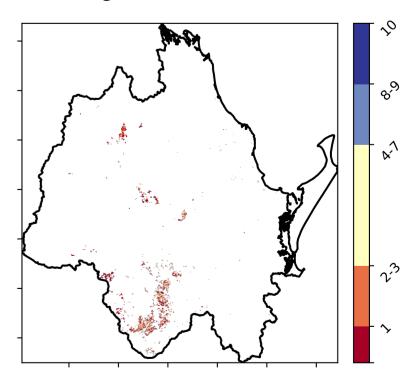
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover Anomaly [%]

R-S-- 20 10 0 -10 -20

Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

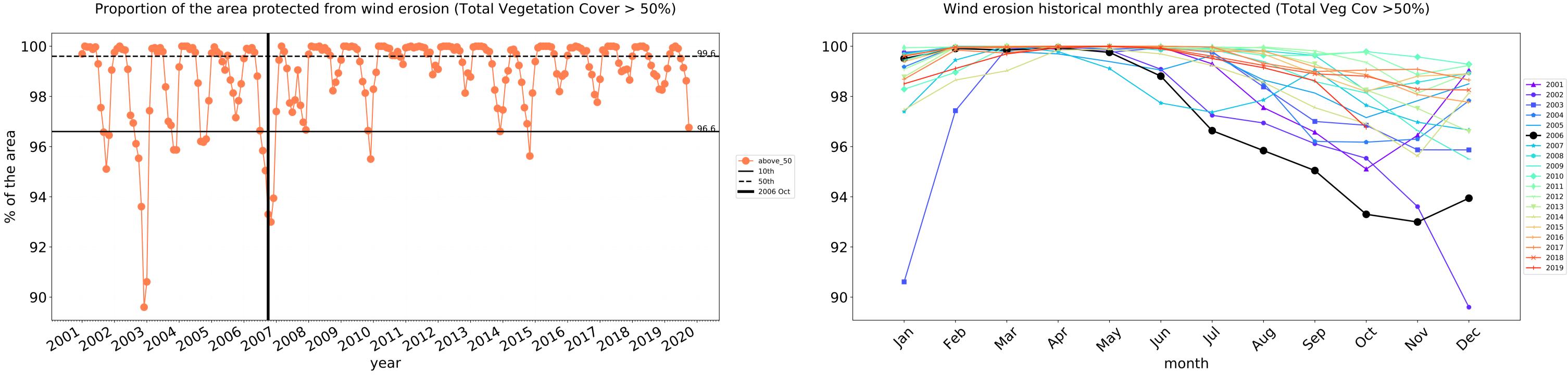
Total Vegetation Cover Decile [%]





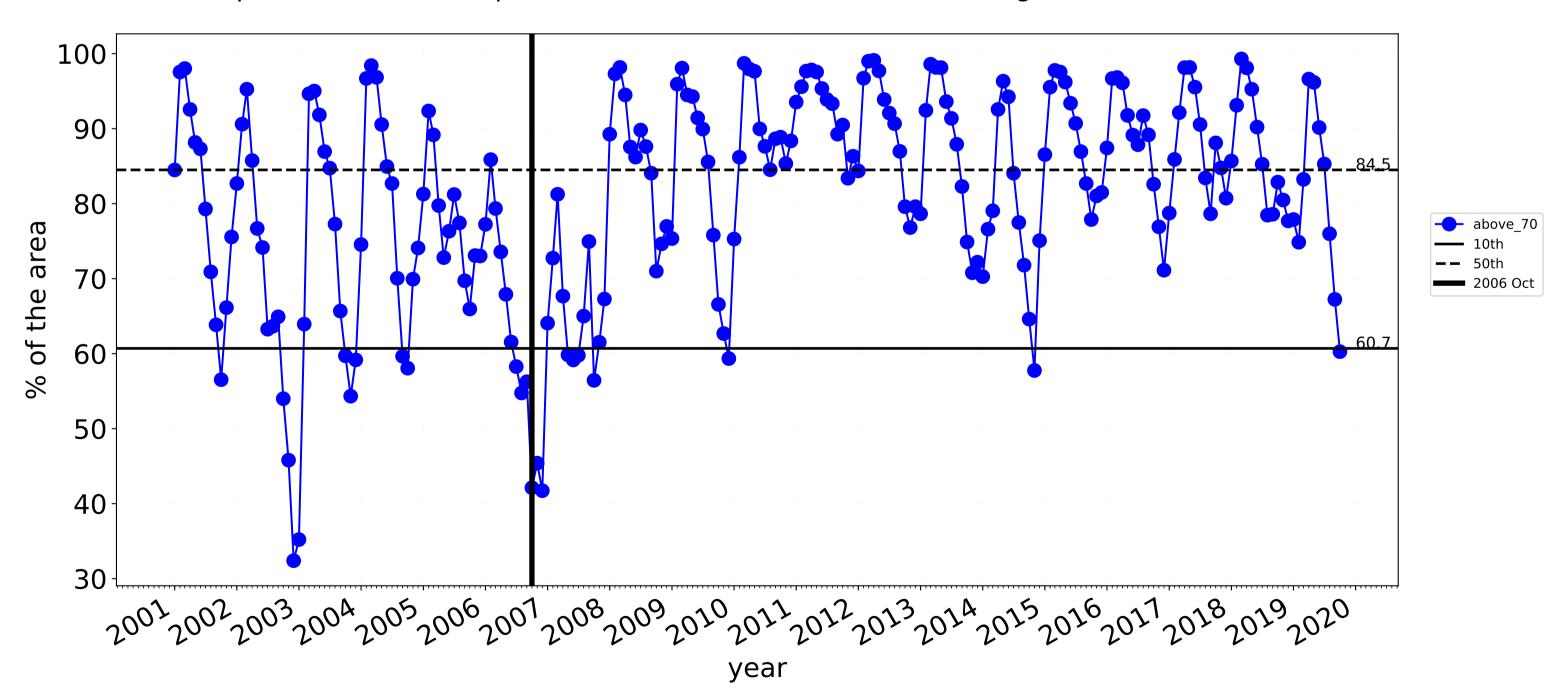
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.





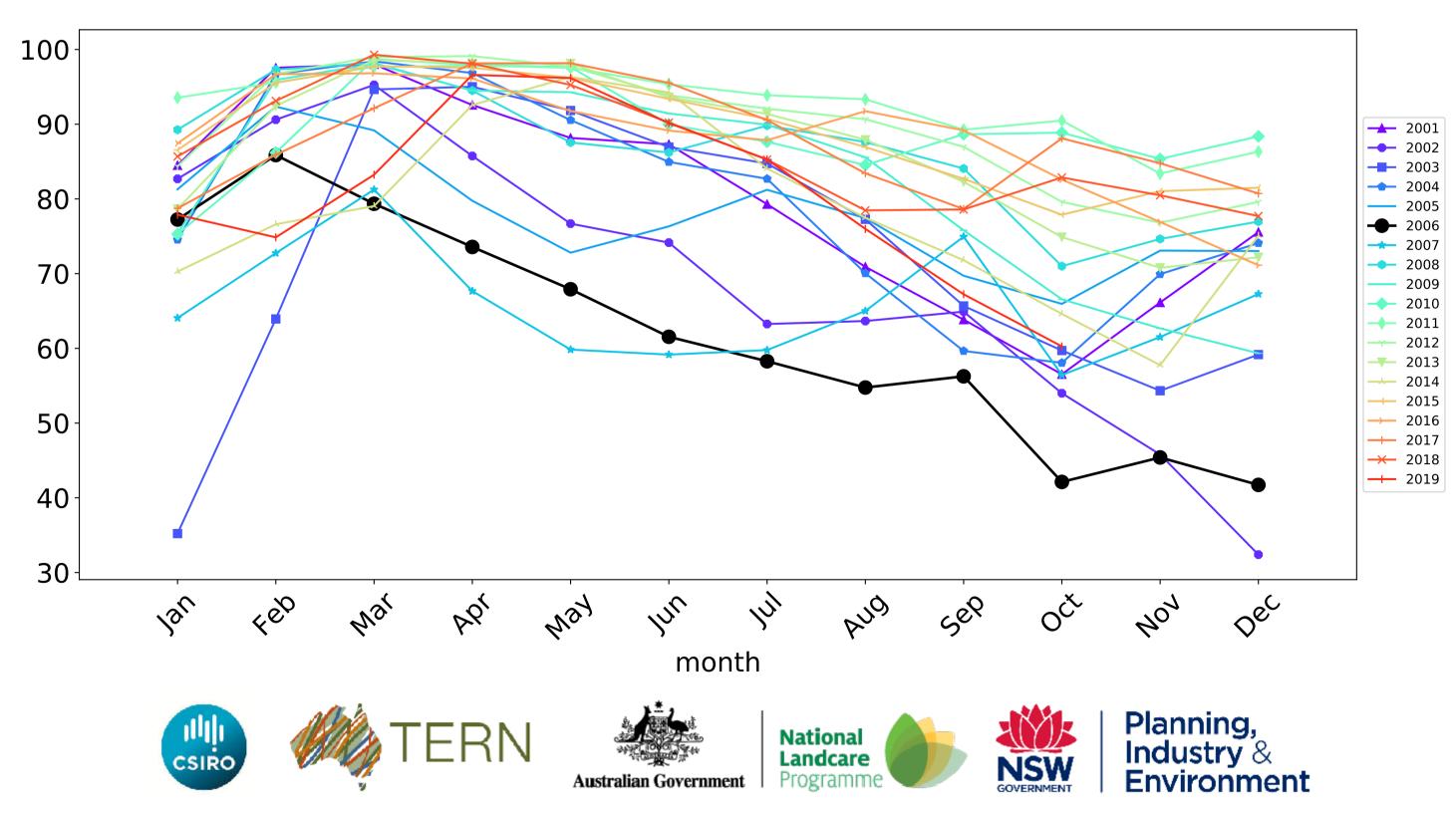
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

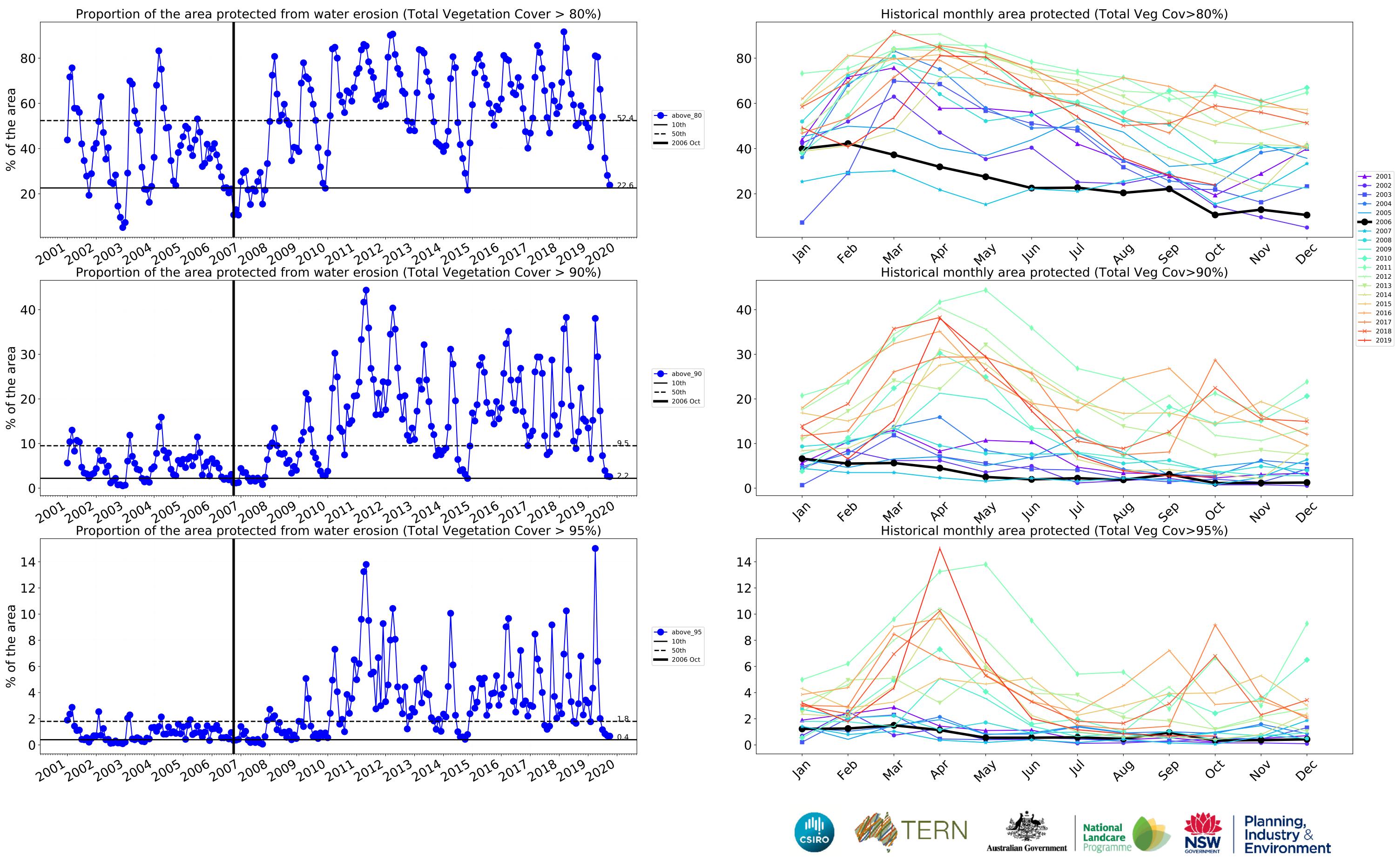
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



Cropping timeseries

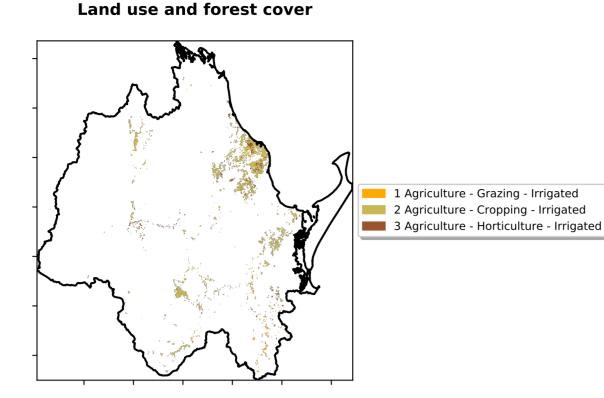
Water erosion historical monthly area protected (Total Veg Cov>70%)



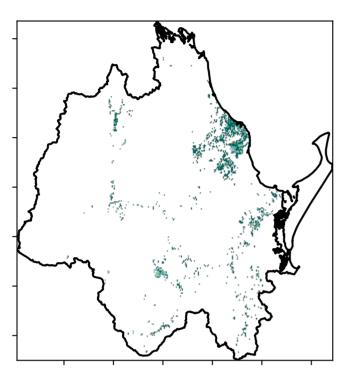


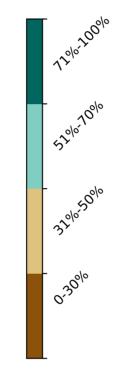
Irrigation

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

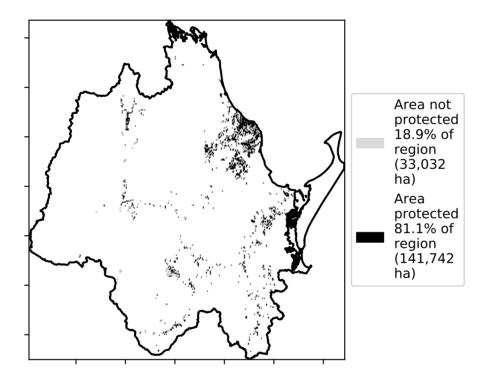


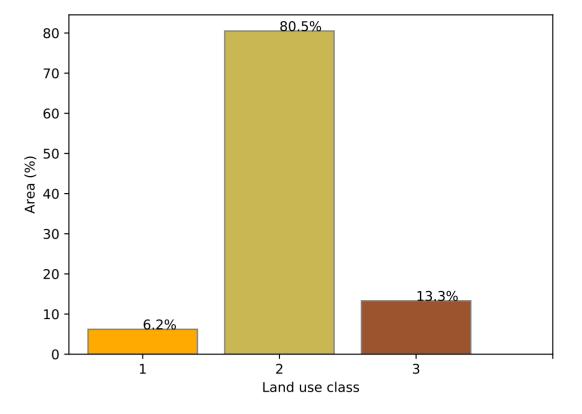
Total Vegetation Cover [%]





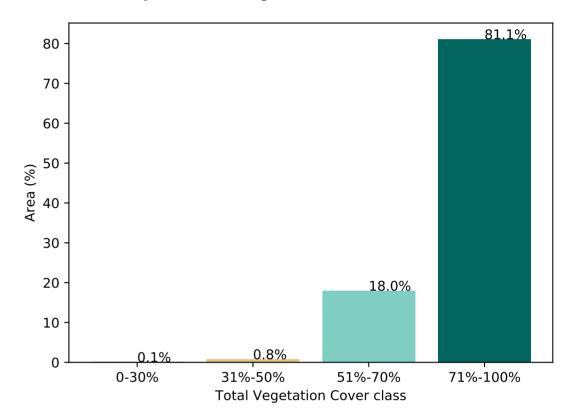
% Area protected from water erosion (>70%)



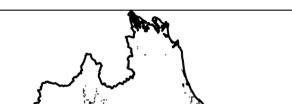


Proportion of each land class in area

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



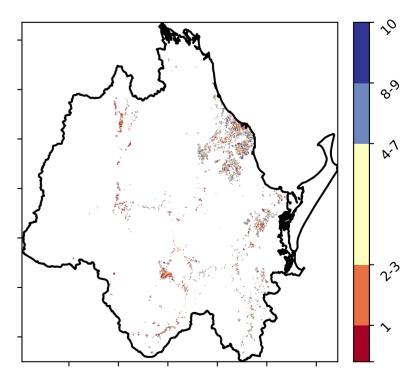
Total Vegetation Cover Anomaly [%]

2-5 - 20 10 0 -10 -20

Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Area not protected 1.0% of region (1,747 ha) Area protected 99.0% of region (173,027 ha)

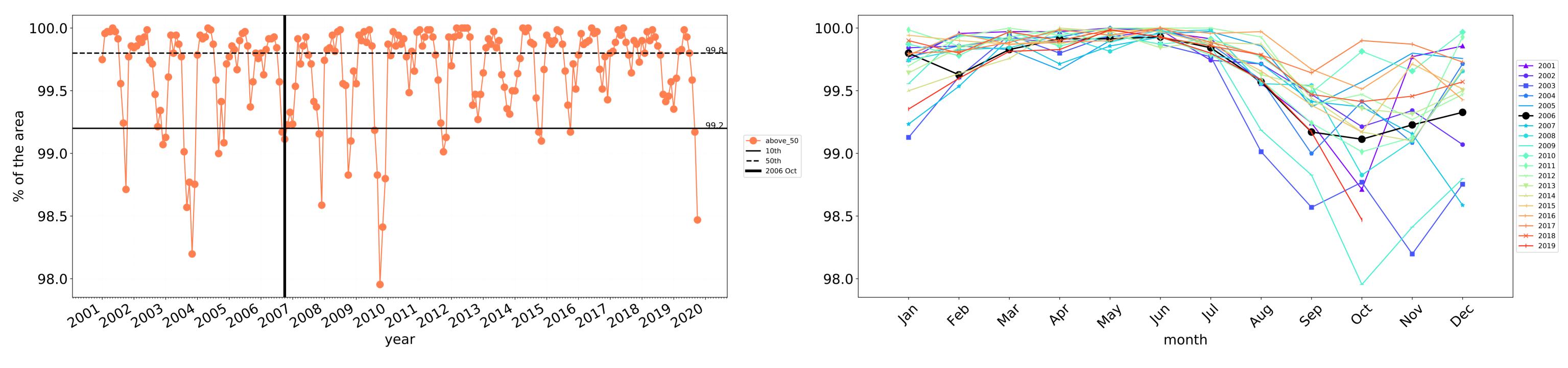
Total Vegetation Cover Decile [%]





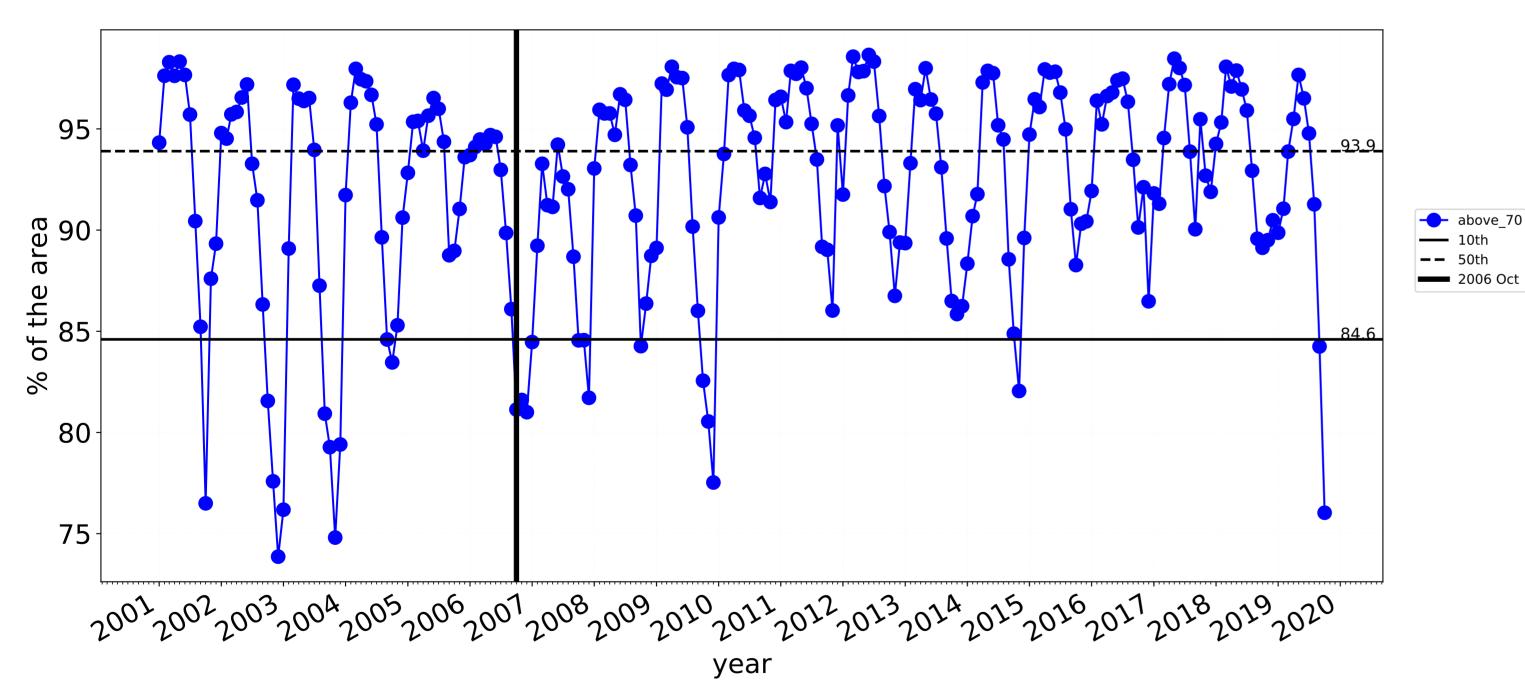
Anomaly show how many percetage points each pixel is from the mean That the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



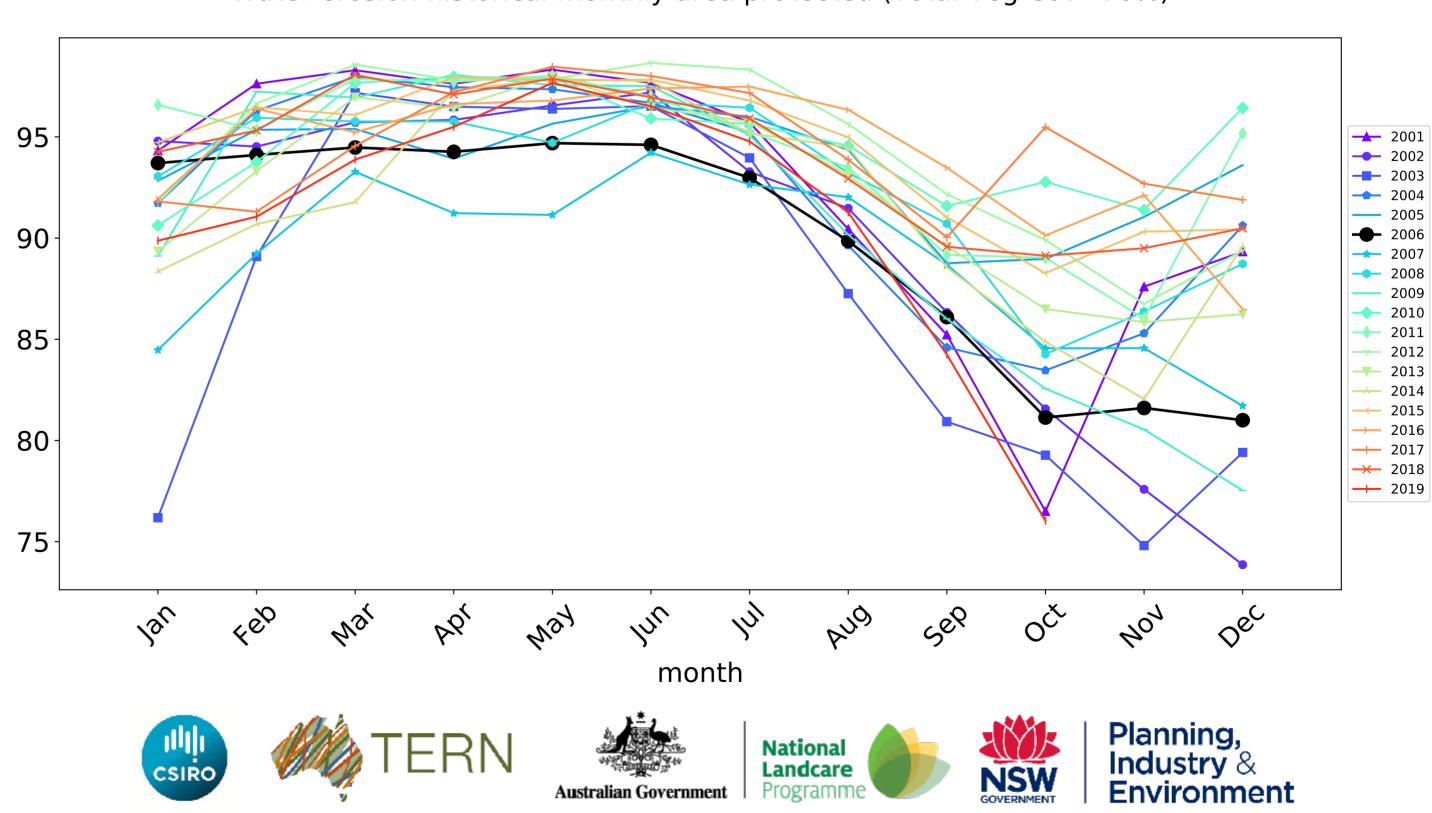


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

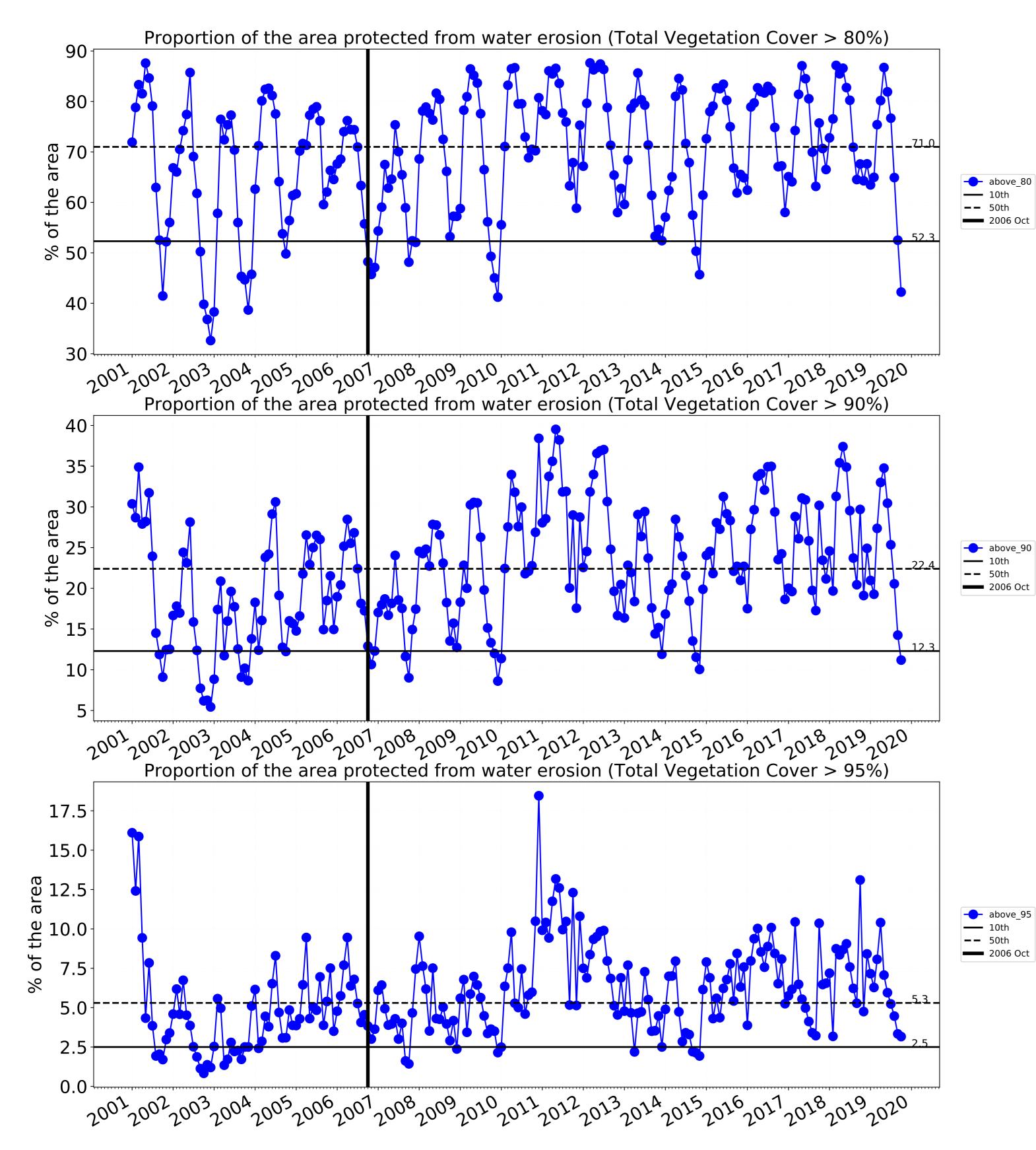
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

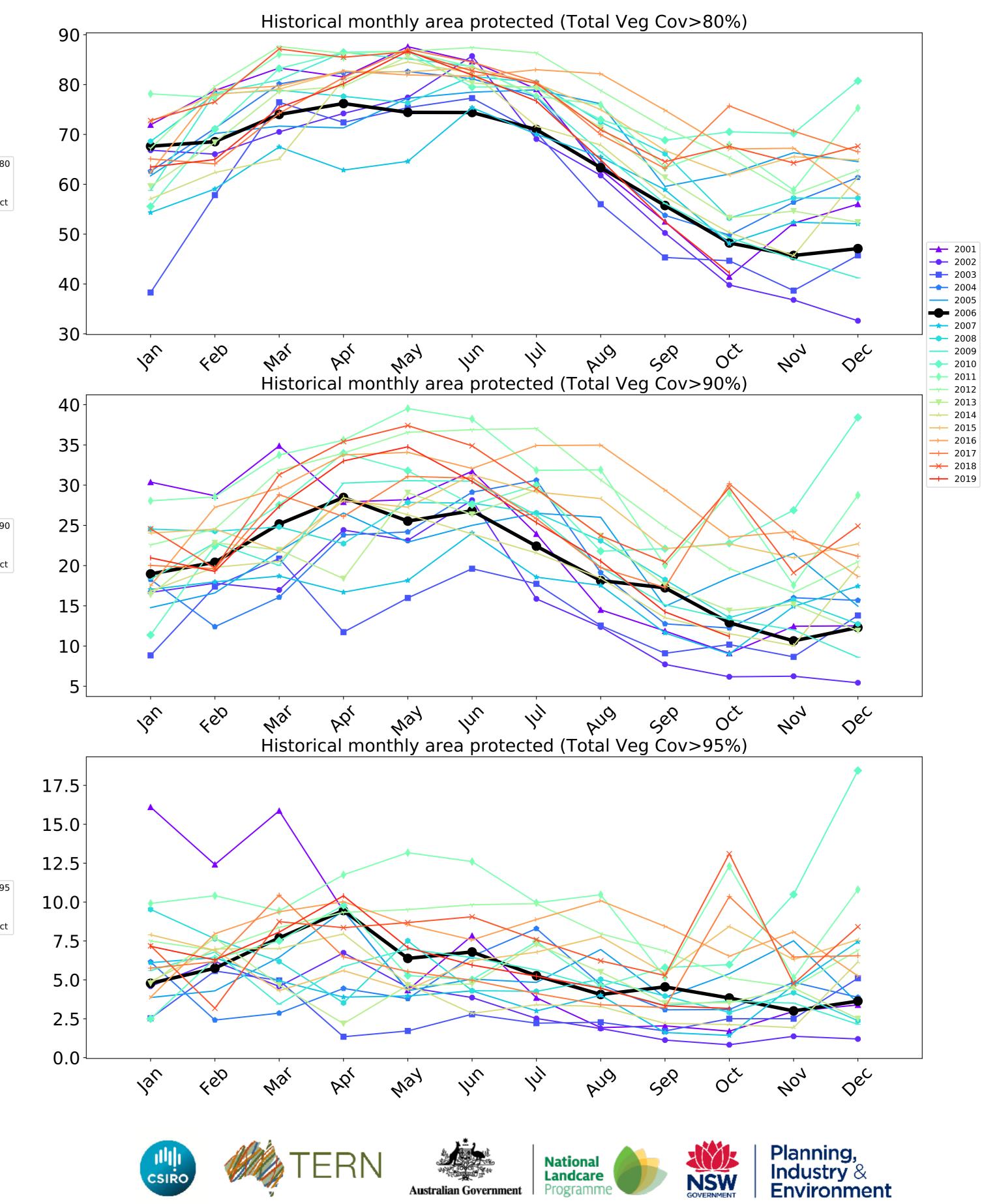


Wind erosion historical monthly area protected (Total Veg Cov >50%)



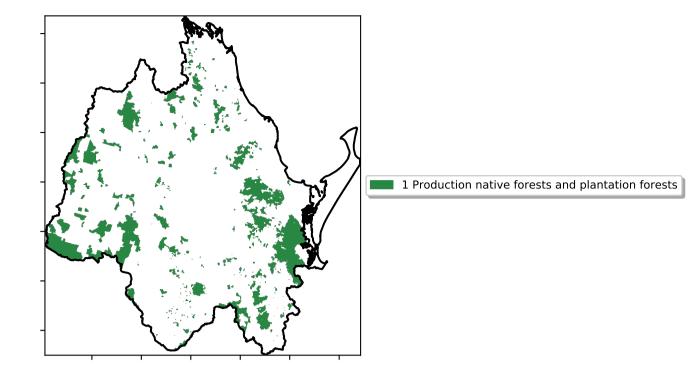
Water erosion historical monthly area protected (Total Veg Cov>70%)



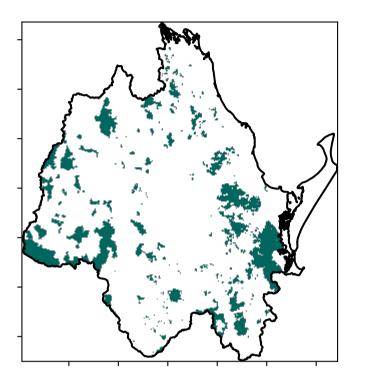


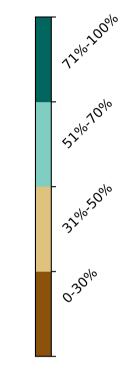
Production native forests and plantation forests

Land use and forest cover

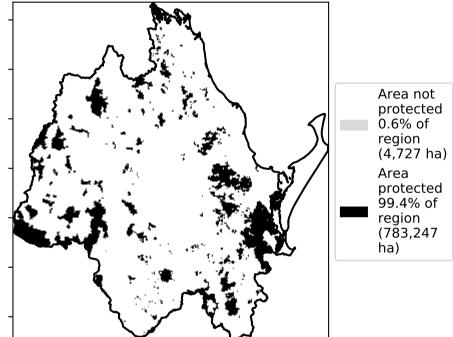


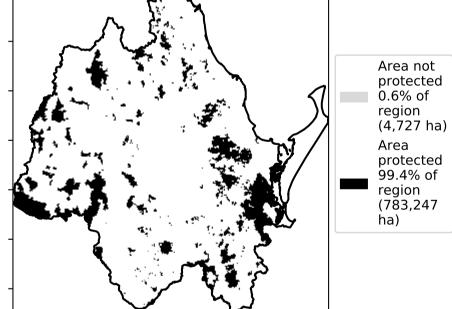
Total Vegetation Cover [%]



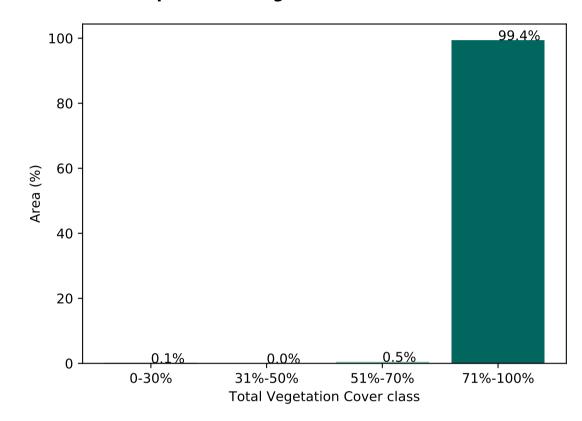


% Area protected from water erosion (>70%)

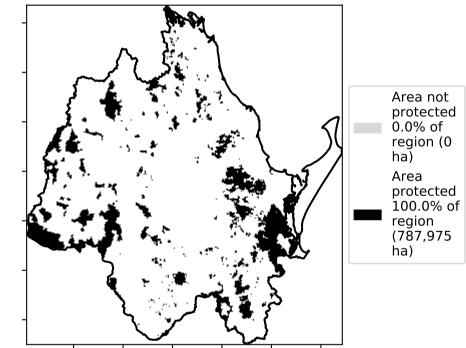




Proportion of vegetation cover class in area



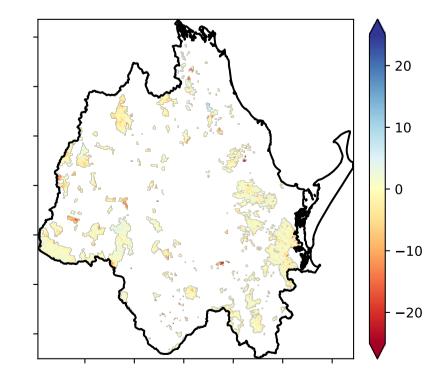
% Area protected from wind erosion (>50%)



Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

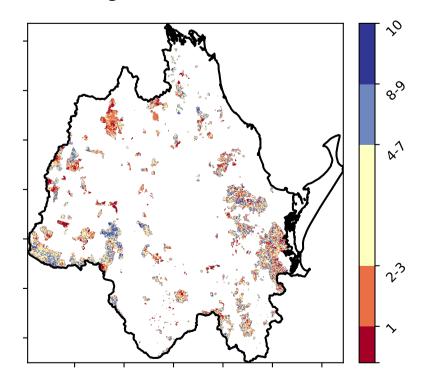
Catchment Scale

Total Vegetation Cover Anomaly [%]



Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]

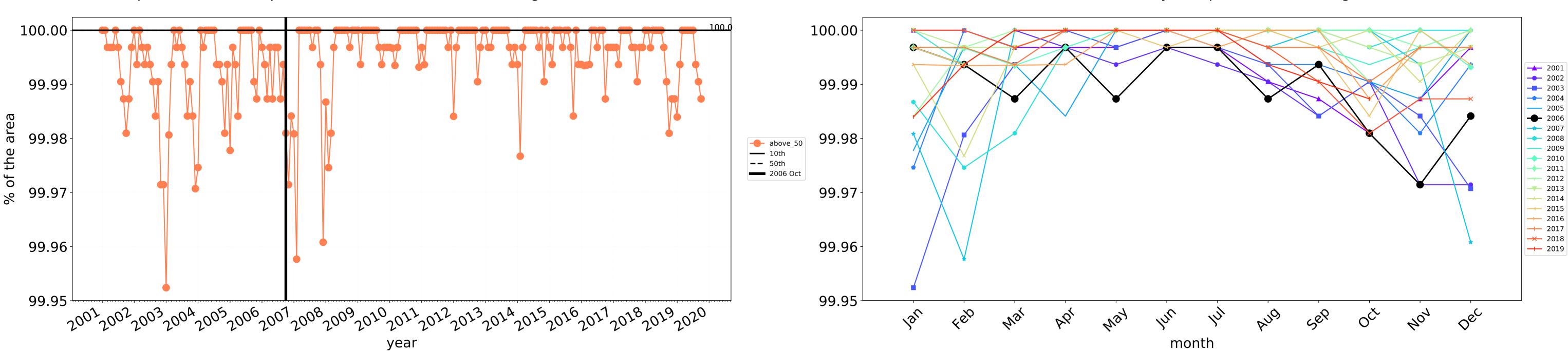




Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map from 2001 to 2019.

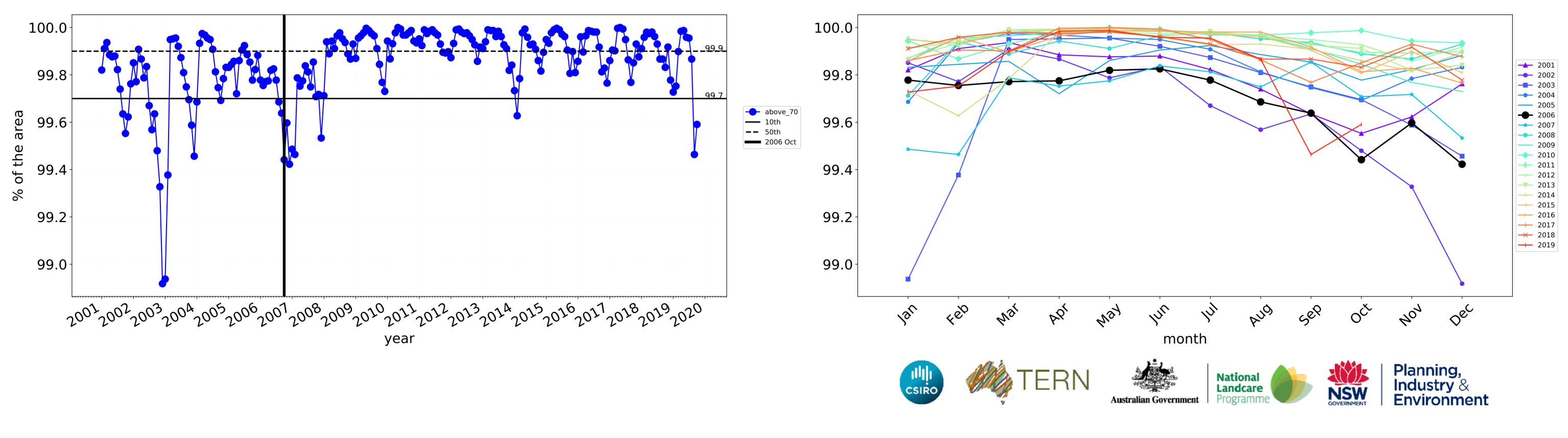


Production native forests and plantation forests timeseries



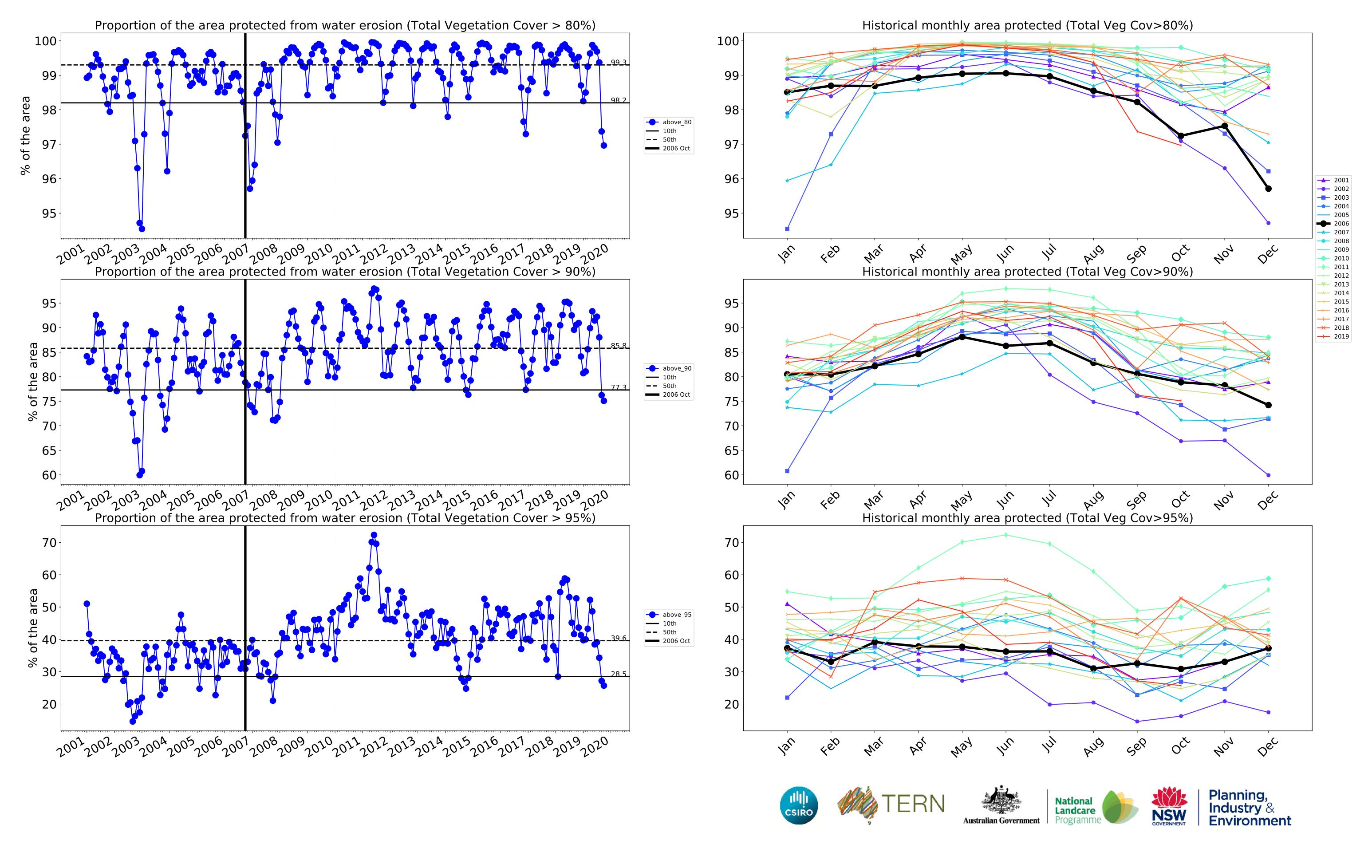
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



Water erosion historical monthly area protected (Total Veg Cov>70%)

Wind erosion historical monthly area protected (Total Veg Cov >50%)



Burnett Mary (5,558,150 ha and no data 18,705 ha) Percentage area and hectares protected with TVC threshold 30,50,70,80,90 and 95%

Land use and forest cover Class	area(ha)	above_30	above_50	above_70	above_80	above_90	above_95
Entire region	5,558,150	100.0% 5,556,199	99.8% 5,544,422	92.9% 5,165,865	76.9% 4,276,253	46.4% 2,577,119	18.9% 1,048,510
Conservation and natural environments	675,250	99.8% 673,700	99.4% 671,500	98.4% 664,550	96.0% 648,575	83.7% 564,850	49.9% 337,025
Conservation and natural environments Woodland forest	180,450	99.8% 180,075	99.5% 179,475	97.9% 176,750	94.2% 170,025	74.4% 134,325	39.7% 71,575
Conservation and natural environments Forest (non woodland)	466,675	100.0% 466,450	99.9% 466,125	99.3% 463,400	97.7% 456,125	88.6% 413,525	54.9% 256,425
Agriculture	3,882,675	100.0% 3,882,525	99.8% 3,874,550	90.6% 3,518,750	69.4% 2,693,050	33.6% 1,304,325	11.4% 441,450
Grazing	3,620,500	100.0% 3,620,500	100.0% 3,619,775	92.2% 3,337,775	71.7% 2,596,025	35.3% 1,279,075	12.0% 433,800
Grazing non forest	2,315,850	100.0% 2,315,850	100.0% 2,315,200	88.0% 2,037,500	58.1% 1,344,775	19.9% 461,700	6.3% 146,050
Grazing Woodland forest	711,250	100.0% 711,250	100.0% 711,200	99.7% 708,800	94.8% 674,550	53.4% 380,125	14.0% 99,325
Grazing - Forest (non woodland)	593,400	100.0% 593,400	100.0% 593,375	99.7% 591,475	97.2% 576,700	73.7% 437,250	31.8% 188,425
Cropping	81,725	100.0% 81,725	93.3% 76,250	42.1% 34,425	10.7% 8,725	1.1% 925	0.3% 275
Irrigation	174,775	99.9% 174,625	99.1% 173,225	81.1% 141,800	48.2% 84,300	12.9% 22,550	3.8% 6,700
Production native forests and plantation forests	787,975	100.0% 787,975	100.0% 787,825	99.4% 783,575	97.2% 766,250	78.9% 621,450	30.8% 242,975

